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RETROSPECT AND PROSPECT IN EDUCATIONAL RESEARCH

W. TAYLOR *Professor of Education, University of Bristol School of Education*

The following is the text of the address given by Professor Taylor at the Annual General Meeting and Conference of the National Foundation for Educational Research, 2nd December 1971, at Grosvenor House, Park Lane, W.1.

I WANT to argue that if research is to be effective in advancing our knowledge and understanding of the educational process, and in helping policy makers, administrators, teachers—and pupils—to achieve their objectives, three inter-related conditions must be met—adequate resources, appropriate structures, and a sympathetic political, social and educational climate. I want to suggest that despite major advances in the past decade, our present arrangements leave much to be desired in respect of important elements of these three conditions. We are at present digesting the effect of what was, given the small base from which we began, a massive increase in resources for educational research and development in the sixties. I want to propose that we give careful attention now to the resources, the structures and the climates that may enable the impetus of the recent past to bear fruit in the seventies and eighties.

Resources are inevitably, but not exclusively, a problem of money. The active research worker always needs money. Sometimes he is led to claim that his activities will help to save it. Take the following quotation as an example:

> 'In the present ferment of opinion as to national education, the work of a well equipped educational intelligence office might do much to provide unity of educational effort, understanding of the needs of different types of schools and a clearness of educational aims. In the past, much public money has been wasted through failure to make a careful study of educational methods and problems before embarking on schemes entailing large expenditure. It is probable that great savings would be effected by the supply of timely information on many educational subjects for the consideration of those locally interested in the supply and management of schools. The aim of the writers of such reports should be to give practical help to educational workers, without being narrowly statistical or doctrinaire. . . . It should be their aim to disentangle what is valuable from what is obsolete or antiquated in our English educational traditions, and to preserve all that is good in our present educational arrangements . . . .'

Here are many of the elements of the contemporary researchers' claim—a stress upon the importance of information, a hope that research might help to avoid waste of money, the importance of being of practical help to the educationist, the dangers of the 'narrowly statistical' and the doctrinaire, the emphasis on innovation within a stable institutional structure. Yet this is not a contemporary statement. It was made in the year 1903, nearly seventy years ago, in a departmental minute from Michael Sadler, Director of the Office of Special Inquiries and Reports, to the President of the Board of Education (Board of Education, 1903). The way in which we distribute money symbolizes the importance that, as individuals and as a society, we attach to different kinds of activities. In authorizing the establishment of the Office of Special Inquiries and Reports in 1894, the Treasury permitted an annual expenditure not exceeding £2,400. Sadler, in an exchange of minutes with Morant, prior to his resignation of the directorship, claimed that the expenditure of his branch had never run above £1,700. Not so, replied Morant. There was a hidden element.

'. . . there is an item of cost as to which you appear to have been wholly misinformed. The volumes of special reports which you describe as "practically self supporting" are really published at a considerable loss. The expenditure on these volumes has in seven years amounted to nearly £3,700; the amounts realized are barely £1,400. You must, therefore, add to the cost of your office the sum of £2,300 distributed over the period of the publication of these reports.'

But there was more to it than money. Sadler protested the need for independence:

'In order that the scientific work of educational inquiry may be searching and fruitful, it must be intellectually independent. Those engaged in it must be free to state what they believe to be true, apart from preconsiderations as to what may at the time be thought administratively convenient. . . .'

But in 1903 such a claim for independence, which today is such an important element in the work of bodies such as the National Foundation for Educational Research and the Schools Council, could not be conceded. Morant made the position abundantly clear.

'The President is fully sensible of the value not only of the reports, but of the inquiries made, the information supplied, and the library work done by you and your staff; but it cannot be too clearly impressed upon you that the work of the Office of Special Inquiries and Reports is done and must continue to be done, for the benefit of the Board, at the instance of the Board, and under the direction of the Board'.

We have come a long way in the seventy years that have passed since these minutes were written. Although I am sure that some of my more radical students would accuse me of bourgeois complacency, I think that we now have a better understanding of how official interests in and responsibility for educational activities, reflected in the spending of public money in support of research, can be reconciled with the essential independence of the research worker. We may not always succeed in such reconciliation, and the limits and points of contact of both public interest and professional independence require to be kept continually under review.

We have also come a long way in the last seventy years in the amount of money spent on educational research. The Treasury's £2,400 of 1894, even at today's prices, would hardly support one of the many hundreds of research and development projects that are at present being undertaken; the best estimates currently available —shortly, I believe, to be improved upon by the results of an NFER survey initiated by the late Dr Stephen Wiseman—are that we spend about 3½ million pounds annually on all the activities that come under the heading of research and development in education. By transatlantic standards, actual or projected, the sums involved are small. Taking public and private sources together, the financial resources we devote to R and D amount to some 0·16 per cent of our educational budget.

But comparisons between countries are perhaps less useful than comparisons over time. Our current expenditure is very large in comparison with what it was ten years ago, and it has imposed strains—on the creditability of teachers who have had little opportunity to become familiar with research during their training, on the small number of well qualified educationists and social scientists with the knowledge, experience and the interest to be good practitioners of research, on the university departments of education, often the poor relations in their own university family, on the means for the diffusion and dissemination of research findings and development materials, and on those who administer and distribute the research funds.

Over the last ten years most of the new money provided for educational research and development has gone into specific inquiries of limited duration, usually lasting three to five years, sometimes less, employing a director and a couple of research assistants, and costing, shall we say, between twenty and fifty thousand pounds. But too little money has been devoted to building up the other kinds of resource on which the success of such projects depends—especially research facilities and trained manpower. The Council for Scientific Policy has recently issued a report of a working group under the chairmanship of Sir Harry Massie on the support of scientific research in universities (Council for Scientific Policy, 1971). The document is particularly concerned with the dual support system, whereby university research is funded partly through UGC allocations and partly by means of research council grants for specific projects. The working party argues, I think correctly, that the ability of universities and research organizations to sustain a high level of project based research activity is dependent upon the existence of an adequate 'research floor'. This basic floor of support includes the provision of adequate supporting staff, such as technicians and secretaries, library and computing facilities, a proportion of regular staff time that can be devoted to research, and 'sufficiently freely disposable funds to ensure that relatively inexpensive research can be initiated by academic staff and carried to a stage at which, if appropriate, Research Council support can be sought'. Such provision is reflected in published returns of departmental expenditure. The working party has calculated that, including salaries other than those of the teaching and research staff themselves, the average departmental expenditure per full-time member of staff in science faculties is £1,574, in medicine, dentistry and health £1,618 and in engineering and technology £1,845. I have made similar calculations for education, where the figure is £389—or about a quarter of that for medical, scientific and technological subjects. What this suggests is that the research floor for education is not adequate to support the large number of individual projects that have in recent years been placed upon it. It is significant that the small number of universities that received specially earmarked UGC grants in the sixties to stimulate educational research activity are among those that today undertake more than their share of contract research work, train larger numbers of research workers, and produce some of the more noteworthy research reports and findings.

If the funds currently devoted to the support of research projects are to be well spent, and a climate created in which requests for additional project money receive sympathetic attention, then the research floor needs strengthening. It is not only the overall magnitude of the sums available in support of educational research that matter, but the way in which they are distributed between different functions. Too high a proportion of free funds at the disposal of the academics and professionals may generate complacency and too many way-out studies; too high a proportion spent on specific short-term projects inhibits long-range planning and encourages the erection of rickety multi-project structures, inadequately supervised by absentee landlords. A proper balance needs to be kept between the two kinds of support if research workers are to be productive and research reports fruitful. The current imbalance means that we are getting less than full value from the money that we are spending.

Research manpower is another aspect of resources for research that needs attention. The late Dr Stephen Wiseman repeatedly drew attention to the shortage of properly trained and qualified research workers in education. At the end of 1970 the Social Science Research Council conducted a survey of enrolments of students for postgraduate courses in the social sciences in 1968 and 1970. Education recorded a 58 per cent increase in enrolments in the two years, exceeded among the twelve areas into which the SSRC divides its work only by management. But if the education figures are broken down according to the type of study programme followed, a different picture emerges. The proportion of full-time students working for higher degrees by means of taught course increased from 146 to 265, a growth of 82 per cent. But the proportion of full-time *research* students in education rose only from 105 to 131, an increase of only 25 per cent. Given that only just over a fifth of all these full-time students were supported by means of SSRC postgraduate studentships, it seems likely that the vast majority are experienced full-time teachers on secondment. There is a widespread opinion that the successful educational researcher needs substantial teaching experience if he is to understand the kinds of things that he will see going on in schools and be acceptable to the teachers and heads on whose co-operation the success of this research depends. The pattern of postgraduate qualifications in education that has developed during the past twenty-five years is, with notable exceptions, closely geared to the needs of the mature candidate with teaching experience. Unfortunately, such evidence as is available on this issue suggests that productivity in research is negatively correlated both with length of teaching *experience and with general qualifications in the field of education. The research in this field is almost wholly American and the productivity criteria employed are somewhat crude, but there is virtual unanimity that*

> '... potential researchers need to be identified, selected and encouraged while they are young; that persons engaged in educational research should have a strong background in the liberal arts, rather than extensive courses in education; and that their grounding in the behavioural sciences should be strengthened as they study the philosophy and science of education'. (Buswell, 1970).

Many first class research workers have come, and will continue to come, from the ranks of experienced teachers, and some classroom experience must remain a *desideratum*. But it is vitally important, if the quality of educational research is to be enhanced, that a larger proportion of young graduates, with sound knowledge and understanding of one or more of the social sciences, together with appropriate research skills, should be recruited to educational research. In so far as a larger proportion of such work is now undertaken in teams, it is easier to provide an appropriate mix of age, qualifications and experience. But if genuine breakthroughs in our knowledge of the dynamics and correlates of children's learning are to be achieved, then we cannot rely entirely upon the existing pool of experienced teachers as a source of future educational researchers.

Adequate resources of money and manpower constitute only one of the necessary conditions for successful educational research. Unless there exist appropriate structures within which these resources may be deployed, we are likely to be disappointed with the outcomes of the work that is undertaken. Such structures are of four kinds. First, there needs to be machinery by means of which the interested parties may formulate their ideas about the direction in which educational research should be proceeding, determine their priorities for future work, and stimulate and inform the activities of the funding agencies, the independent research organizations and the universities. To some extent this function is fulfilled through the many conferences and gatherings that discuss educational issues, and by means of the educational press. To a greater extent than in basic scientific and humanistic studies, the kinds of social and educational research that at a given time society chooses to support tend to reflect its current problems and preoccupations, the things that matter to power groups within it, the facts that are needed to help shape or, sometimes to legitimate, decisions about policies and programmes. There would be nothing worse than integrating the efforts of the funding bodies in such a way that a refusal of grant from one meant a refusal from all. There are few fields of academic activity in which a measure of pluralism is more important. Nonetheless, I would like to look forward to the time when there exists more effective machinery than at present for discussing and reconciling priorities, needs and resources. None such exists at present.

Second, appropriate structures are needed for funding and monitoring educational research and development. The past decade has seen a rapid increase in the amount of research support provided by the Department of Education and Science. It has seen the creation of the Social Science Research Council, and the emergence of the Schools Council. But development work, rather than basic research, accounts for a large part of the increased level of activity. Difficult as it is, such development work often seems to have a clearer pay-off than basic research.

The relationship of research and development in education is complex. There are those who see development as parasitic upon more fundamental kinds of understanding, and observe with anxiety that both here and in the United States, a large volume of development activity is currently dependent upon a rather limited and only slowly growing body of host ideas and findings. Others see no sharp distinction between R and D; applied, policy oriented and action research can sometimes contribute directly to our basic knowledge about the social and psychological worlds of teaching and learning. Whatever the conceptual, conventional and managerial distinctions between different kinds of research and development activity, it seems clear that some kind of balance has to be kept if the work done is to provide both real increments to knowledge and is to influence educational policies and practice.

The attractive practicality of development work, in comparison with the doubtful promise of more theoretical studies, is dangerous if it results in the neglect of the theoretical foundations on which all educational efforts must rest.

Third, there need to exist appropriate structures within which the actual research work can be carried on, and within which suitable employment and career possibilities for research workers exist. I have already tried to say something about the problem of independence, and the importance of an adequate research floor within such organizations on the basis of which short and medium term contract and commissioned work can profitably be undertaken. There are numerous questions to be answered about the optimal internal structure of research organizations, the possibilities of designating 'centres of excellence' that will concentrate upon particular areas and types of research, and the necessity of ensuring that those concerned with educational research have opportunities for establishing and maintaining contact with teachers, students and researchers in other related social science fields.

Fourth, we need means whereby information about on-going research, and the findings of completed research, may be made available to other workers, and to policy makers, administrators and teachers for whom it is intended. Once again, despite, or perhaps as a result of, the very rapid growth of research activity in the sixties, the scale of our project activities has overtaken the means available for the dissemination of information and results. There are a number of bright spots, such as the Foundation's popular series of research reports, the Schools Council's willingness to add dissemination years to the life of some of their major projects, and the clear and helpful character of the research abstracts published in the annual report of the Social Science Research Council. But these do not add up to a coherent system of information and dissemination. There are still huge gaps, not only in the teacher's knowledge of research findings that might be useful to him, but also in the means that researchers have available for finding out about what is going on elsewhere in their own field of interest. Any hopeful prospect for educational research requires that information, dissemination and abstracting services be still further improved. In the meantime, without any vast additional expenditure, there would be a considerable gain from such simple devices as each of the funding bodies deciding to adopt a common format in reporting the current and completed projects within its programme.

I have suggested that another condition for effective educational research is the existence of a climate of political, social and educational ideas sympathetic to research pursuits, and in which research is seen by policy makers, administrators, heads and classroom teachers as capable of making a real contribution to the rationality of decision making. (Taylor, 1972). Only a very limited part of the knowledge about education that all these people possess and employ in the performance of their everyday tasks can strictly be regarded as research based. Only exceptionally will the daily discussion of a problem or difficulty include the citation of a particular piece of research that contributed significantly to resolution or decision. Yet even when there is no explicit reference to particular studies, it is unlikely that such discussions will be unaffected by research. It exerts its influence by helping to determine the agenda of problems and difficulties, and in providing some of the elements that shape individual and group orientations towards particular issues. Just as anyone who talks and writes about man and society today is likely to have been influenced by, even if they never refer to, have never read or have never even heard of, the work of Darwin, Marx or Freud—so discussions about education are likely to be influenced by research on such topics as, for example, social class and educational opportunity and stages in children's learning as have been reported during the past twenty-five years. This, and earlier research, arose from the problems of its time, and produced findings which have helped to suggest and define new problems and issues. Research on mental functioning has had the effect of removing certain concepts from our vocabulary, such as faculties, and of downgrading the importance of others, such as attention and memory. Equally, it has pointed up the existence of problems which now feature as important items in the agenda of our concerns, such as the effects of early maternal deprivation, or of impoverished linguistic environments, or the task of delimiting more accurately the stages of mental growth.

All this points to the need to beware of simplistic assumptions regarding the actual and likely pay-offs from research. Some of these are fairly readily traceable, but most make their way into thinking and practice less directly—through the literature on education and, in the case of teachers, perhaps more compellingly through courses, conferences and lectures at which findings are referred to or drawn upon, or merely serve as the implicit underpinning of the ideas and suggestions of a lecturer. Some research is capable of producing hard data which might act as a basis for policy, and there are many topics in relation to which the availability of such data would certainly facilitate policy decisions. But for the most part the influence of research has been to *sensitize*. It has indicated the importance of certain problems and the danger of the unself-conscious use of certain procedures, without necessarily providing clear-cut calculations of advantage or firm foundations for decision. Such a sensitizing effect, an awareness of a problem which needs to be thought about, can result merely from the existence of a particular piece of research, independently of its conclusions. Not all research is like this, but there is more of it than we would sometimes like to admit, and there is no harm in recognizing the fact. Not to do so is to invite unrealistic expectations of the part of funding agencies and the public, inflated claims, pretentious methodology and statistical over-sophistication on the part of the researcher, and an all round sense of disappointment with the pay-off. Nor should we be too reluctant to confer the title of research on such studies. In so far as they involve sustained systematic inquiry, require the careful identification, sifting and evaluation of relevant evidence, and respect the conventions appropriate to the disciplines on which they depend, such studies, even if they produce little by way of clear-cut conclusions, constitute a genuine increment to our knowledge of educational processes. The existence of on-going work of this kind, on a wide range of topics, constitutes an important kind of defence against the over-simplification and polarization of issues that is inherent in debates about a subject so political as education. The fact that material on research forms only a very small part of the literature on education, and that most discussions about education contain few explicit references to research, is no real guide to its influence and certainly no basis on which to calculate its usefulness in cost/benefit terms.

I have tried to argue that the future prospects of educational research are dependent upon adequate resources, both of money and of man-power, upon the existence of appropriate structures for initiation, execution, and dissemination, and a climate of opinion in which both the promises and the limitations of educational research evoke a positive and understanding response. During the past twenty-five years the research structures and research procedures that have been built up in this country have attracted widespread international attention. The first report of the NFER for the period ending March 31st 1947 stated:

> 'Each advance in technique and interpretation opens up the possibility of exploration in ground previously regarded as inaccessible. But this mutual stimulus can only be effective where intimate contact is maintained between the pure and applied sides, and in education this means that the research workers and the teachers in the schools should each be kept fully apprised as to the additions being made to knowledge and technique. On these grounds, the institution of the National Foundation, one of whose primary purposes is to provide this close liaison, is essential.'

This statement remains as true today as when it was made nearly twenty-five years ago. It is on the basis of an effective partnership, of local authorities, universities, the central government, teachers' organisations, and, above all, the 350,000 teachers and 8 million pupils for whose benefit educational research ultimately exists, that the work of the Foundation has proceeded and developed. I am sure that all those present here today will share with me the hope, and indeed the expectation, that the efforts of the Foundation in the next quarter century will continue to be a major element in the progress and advancement of education in this country.

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AN INQUIRY INTO THE ATTITUDES OF INFANT TEACHERS TOWARDS i.t.a.

LESLIE H. WEEKS *Berkshire College of Education*

THE SCHOOLS COUNCIL's evaluation of i.t.a. (Warburton and Southgate, 1969) did not seek to ascertai the attitudes towards i.t.a. of teachers using traditional orthography (t.o.) other than those involved in th British i.t.a. experiments in teaching control groups. This smaller-scale research aimed to investigat the attitudes of t.o. users as well as i.t.a. users in the Berkshire College school practice catchment area

The attitude measures distinguished clearly between users and potential users of i.t.a. and t.o. users.

No significant differences in attitude relating to the age of children taught, the age and service o the teacher or the position held in school were found for the t.o. sample, nor, contrary to some of th Schools Council findings, for the i.t.a. users. The sole exception was that older t.o.-using teachers showe more feelings against i.t.a. than younger teachers.

About 10 per cent of t.o. users indicated that they were potential users of i.t.a., whilst 13 per cent o i.t.a. users rejected i.t.a. in a future situation. There was little demand for i.t.a. courses; only 3·57 p cent of the t.o. users wished for these.

This inquiry began with a study of the Schools Council investigations (Warburton and Southgate, 1969) which evaluated the published research on i.t.a. to that date, and collected and appraised the views of those who had been concerned with i.t.a. together with certain others. i.t.a. has been fully described in Pitman (1969) and Downing (1964, 1967).

Of particular interest to the writer was the evidence collected in interviews by Southgate in the course of visits to nine LEAs, after which she recorded that 'further visits would not necessarily have brought forward more information', and she found 'a common range of experiences with . . . ideas on i.t.a.'

In i.t.a. schools, Southgate (Warburton and Southgate, 1969) found that, 'usually the attitudes of the staff reflect, although they do not necessarily mirror, the attitude of the headteacher'. Further, the degree of enthusiasm for i.t.a. appeared to be related to three factors: age of children taught, length of teacher's experience with i.t.a., and the teacher's 'general attitude to reading in the infant school' (Warburton and Southgate, 1969, p. 42). Concerning the latte Southgate reports a range of views of infant teachers which seemed to bear on the resul attained with i.t.a. Whilst Downing and Jon (1966) had stated that the determination of th constituent influences in reading 'drive' arisin from this general attitude towards reading woul require a great deal of empirical work, Southgat (1967) had replied that despite its difficulty, should not be omitted from research into differe reading approaches.

It was decided therefore to attempt to measu in a quantitative way the attitudes of teachers an headteachers towards i.t.a. and to compare this, users of i.t.a. with non-users. Furthe amongst t.o.-using teachers, it was thought th there might exist a group with favourab attitudes towards i.t.a. who would use it in future situation; these were termed 'potenti users'. The attitude of present non-users wou be of particular interest as the data might sho why, according to Mercer (1970), 'there is litt sign of a swing to the new method in Britain schools'.

Moreover, Bacchus (1967) found that authoritarianism and support for more rigid methods of teaching were associated. Goodacre (1968), after finding that older teachers tended to be more authoritarian and that teachers' attitudes to pupils' home backgrounds were significantly related to this trait, suggested that the relationship between teachers' personalities and choice of reading method should be studied.

Two further questions were therefore also investigated: are t.o.-using teachers of reception children more likely to favour adopting an innovation like i.t.a.? Are older, more experienced teachers using t.o. more likely to reject i.t.a. than their younger colleagues?

Aims

The inquiry aimed to test the following hypotheses for i.t.a.-using teachers and t.o.-using teachers separately:

(a) that the attitudes of infants' teachers who are i.t.a. users and potential users are significantly more favourable towards i.t.a. than those of other infant teachers;

(b) that the attitudes of infants' teachers who teach reception classes will be more favourable towards i.t.a. than those of other infants' teachers;

(c) that the attitudes of younger infants' teachers will be more favourable towards i.t.a. than those of older infants' teachers;

(d) that the attitudes of headteachers will be more extreme in their favour or disfavour of i.t.a. than those of teachers;

(e) that the attitudes of those teachers with longer service will be more unfavourable towards i.t.a. than those of teachers with short service;

(f) that the attitudes of teachers who are rated as being more authoritarian will be more extreme in their favour or disfavour of i.t.a. than those of other teachers;

(g) that the attitudes of those teachers who are rated high on their basic attitudes to reading in the infants' schools will be more favourable towards i.t.a. than those of teachers who are rated low.

Design and development of the questionnaire

Eight headteachers and 22 infant teachers were interviewed as part of the pilot work, and they were asked, individually and privately, two open questions:

(a) how important do you regard reading in the infant school?

(b) what are your views concerning the use of i.t.a. in the teaching of beginners to read?

The recorded responses were later found to form regular patterns of attitude towards reading in the infant school, and towards the use of i.t.a.

All heads and most teachers stressed the importance of reading in the infant school. In order to introduce a measure of the basic attitude towards reading as an independent variable, it was decided to use Southgate's collected statements to cover her reported range (Warburton and Southgate, 1969, p. 42).

Concerning the use of i.t.a., the writer found that attitude responses could be readily classified into three components.

(a) statements of feeling or affect concerning i.t.a.;

(b) statements of belief or cognition concerning i.t.a.;

(c) statements of action tendency towards i.t.a.

These components of an attitude have been defined by Krech, Crutchfield, and Ballachey (1962). In Upshaw's (1968) classification of scales they are termed affective-subject scale, cognitive-subject scale, and action-subject scale.

The affective statements covered three areas of feeling about i.t.a.: the expression of dislike that i.t.a. is not the 'correct' alphabet and is confusing or unfamiliar; the expression that i.t.a. is a much publicized innovation that is not really necessary; the enthusiasm for i.t.a. as a tool in the teaching of beginning reading.

The cognitive statements included statements concerning i.t.a.'s effectiveness in teaching beginning reading; the wider effects of using i.t.a.; the relationship between the use of i.t.a. in schools, and the use of t.o. in the home, etc.; the transfer from the use of i.t.a. to the use of t.o.; *the after-effects of using i.t.a.* (e.g. 'i.t.a. encourages bad spelling'); the structure of i.t.a.; the *belief that there is a lack of necessity for departing from the use of t.o. in teaching beginning reading*; and miscellaneous statements concerning the cost, and availability of i.t.a. Many of these collected statements reflect the examples given by Southgate from her more extensive inquiry.

Action tendency statements ranged from, 'I would not use i.t.a. in any circumstances', to 'I would not attempt to teach infants to read without using i.t.a.'. These statements were edited, and sufficient included to indicate the range of potential action towards i.t.a.

The items pertaining to the three components of attitude were separately presented in Likert form with five categories of response from strongly agree to strongly disagree.

The questionnaire was piloted with a population of 25 teachers and headteachers and 95 final-year student infant teachers from three colleges. The returned questionnaires enabled item analysis to be carried out on the affective-subject, cognitive-subject, and action tendency scales together with that of 'basic attitude'. The 'discriminatory power' of each item was found by comparing the mean of the upper 25 per cent cases with those of the lowest 25 per cent cases (after Selltiz *et al.*, 1965). Those items which failed to discriminate by more than ·5 (on a five-point scale) were eliminated.

The final form of the questionnaire was drawn up to include a ten-item affective-subject scale, a 30-item cognitive-subject scale, and a four-item 'basic attitude' to reading scale. The action tendency scale was revised completely owing to the occurrence of unforeseen ambiguities in the first form of the questionnaire. This revision was re-piloted on 12 teachers before being included. It was finally included in the form:

'If you were in an infants' school or department where the staff were being asked for their opinions concerning whether or not to adopt i.t.a. as a means of teaching reading would you:

(a) argue strongly in favour of its adoption;

(b) be inclined to favour its adoption;

(c) be inclined to oppose its adoption;

(d) argue strongly against its adoption;

(e) be uncertain?

If uncertain, please give reasons briefly for your uncertainty.' An 'authoritarian' sub-scale was included in the first and second questionnaires this consisted of the four items that Goodacre (1968) had shown to have high correlations with the scale total.

Supplementary questions concerning the use of phonics and the courses on reading which were required were included together with the personal information concerning age-group of children taught, age-group and length of service group of the respondent, position held by respondent, and whether in an infant or junior mixed infants school, i.t.a.-using or otherwise.

Procedure

The final questionnaire form was submitted to a population sample of 228 infants' teachers and infant and junior mixed infants headteachers in March 1970 of i.t.a.- and t.o.-using schools randomly chosen within the college 'catchment area'. Five more heads were asked to respond in addition, in order to increase the total number of headteachers.

Each school head was contacted personally to seek her co-operation, only one school declining owing to staffing problems. The required number of questionnaires prefaced by an introductory letter was then sent to the school together with sufficient stamped addressed envelopes for the teachers to be able to return them individually and anonymously (Oppenheim, 1966). Schools were identified by use of a dot code so that any bias in the pattern of returns could be seen. A follow-up acknowledgement was sent a fortnight later. The response rate after four weeks was 155 (67· per cent) of which 136 were sufficiently completed (60·9 per cent) to use. Returns for i.t.a. heads and teachers were: 76·3 per cent, 61·9 per cent; for t.o. heads and teachers: 52·6 per cent 58·3 per cent respectively.

The affective-subject scale was processed by the Cornell technique, described in Edwards (1957) p. 131-5, to see if it would meet the criteria for a Guttman-type cumulative scale. Items 4 and 5 were found to be unsatisfactory to meet these and were dropped. Strictly, it is necessary to re-apply the scale in its modified, truncated form but owing to the exigencies of time available for the inquiry this was not done. A second table was constructed using eight items, with three response categories (i.e. strong agreement was combined with agreement, and likewise for disagreement) which gave a coefficient of reproducibility of ·86, therefore it is a quasi-scale. The scale gave a possible range of affective-subject scores from 8 to 24 (high = favouring i.t.a.). The cognitive-subject scale of 30 items was subjected to Likert procedure: all items showed an item discriminatory power of more than 1·25: this was considered to show sufficient internal consistency to be acceptable. The reliability of the scale calculated by the split-half method (comparing odd with even items) was indicated by a high Pearson-Bravais product-moment coefficient of correlation of +·9203.

The 'basic attitude' to reading scale of four items was subject to the Cornell technique, but did not form a Guttman scale as expected. Whilst 53 subjects answered consistently at the 'high' end of the scale, i.e. agreeing with statements, 'reading is the most important thing a child does in the infant school', and 'great emphasis must be placed on reading in the infant school', only two subjects answered consistently at the 'lower' end of the scale.

The four items of the sub-scale for authoritarianism failed; there was not sufficient internal consistency for it to be regarded as valid. Of the four, the item, 'Every person should have complete faith in some supernatural power whose decisions he obeys without question', was the most inconsistently answered. In the ten years that have passed since Goodacre's work in 1957 (reported in 1968) there has probably been change in the way in which this item is regarded.

Findings

Teachers' responses on the affective-subject scale were compared with their responses on the cognitive-subject scale, and a high correlation between these scales—one concerned with feelings about i.t.a., the other with belief statements about i.t.a.—was found. The value of the Spearman rank order coefficient of correlation was + ·859.

The action tendency item showed the following results for i.t.a. users and t.o. users respectively in Table 1.

Table 1: Distribution of sample on action tendency categories

CATEGORY	I.T.A. USERS	T.O. USERS
'strongly in favour'	21	1
'inclined to favour'	20	8
'uncertain'	4	18
'inclined to oppose'	6	34
'strongly against'	1	23
	52	84

The distribution of the affective-scale scores and the cognitive-scale scores for the five action-tendency categories for i.t.a. users and t.o. users showed some interesting contrasts.

The affective-scale scores (with a possible range of 8 to 24) indicated that 'opposers to i.t.a.. frequentiy expressed feelings against i.t.a. However, of those i.t.a. users who were 'opposers' (seven cases), only three of these showed strong feelings against i.t.a. Whereas, 41 t.o. users who were 'opposers' scored between 8 and 11 points, 11 cases scored between 13 and 17, whilst five cases scored highly indicating positive *feelings* towards i.t.a. These last five teachers opposed the use of i.t.a. on the basis of their beliefs about it. The teachers who favoured i.t.a., users and potential users, expressed high feeling scores for it. Two 'uncertain' non-users had scores of eight (strong feeling against i.t.a.) but the others ranged from 16 to 24.

The cognitive scale scores (possible range from 30 to 150) showed that those who opposed the use of i.t.a. held beliefs against its use, the range of scores being from 49 to 99. Teachers who favoured the use of i.t.a. ranged in scores from 89 to 144, with the mode at 119. Those who were uncertain abouts its use ranged from 79 to 119, there being no difference in the spread of the scores of the four i.t.a. users and the 18 t.o. users in this action category.

Concerning the hypotheses, highly significant differences were found on the affective-scale and cognitive-scale totals between users plus 'potential users' of i.t.a. and the t.o. users.

Mean affective-scale score total:
users and potential users = 22·1

Mean affective-scale score total:
t.o. users (opposers and uncertain) = 11·1
(Mann-Whitney U test, z = 8·56,
p = ·00003)

Mean cognitive-scale score total:
users and potential users = 108·48

Mean cognitive-scale score total:
t.o. users (opposers and uncertain) = 77·97
(x^2 = 65·657, p = ·00003)

There were no significant scale score differences for i.t.a.-using reception teachers compared with those teaching older infants; nor were there significant differences for reception t.o. users compared with other t.o. infants' teachers. For i.t.a. and t.o. users, reception teachers showed similar scale means to those of teachers of older infants.

There were no significant differences in scale scores between the four age groups of i.t.a. teachers. In the case of t.o. users, older teachers showed significantly more feeling against i.t.a. compared with their younger age group teachers (x^2 = 11·84, 3 df. significant at ·01 level). Cognitive-scale scores were not significantly different between age groups of teachers.

Comparing the scale scores for 13 heads and 39 teachers, all i.t.a. users, no significant differences were found. For t.o. users, ten heads were matched with ten t.o. teachers for the variables of whether in a junior mixed infants or infants' school, age and service and no significant differences were found in their scale scores.

There were no significant differences in either, i.t.a.- or t.o.-using teachers between different groups according to length of service. The sample involved in the inquiry may not have been large enough to indicate such differences.

The four authoritarian sub-scale items failed to show internal consistency of response by teachers, so that differences in attitude towards i.t.a. on the basis of an authoritarian trait measure remains open.

Likewise, the attempt to measure Southgate's 'basic attitude' towards reading was not successful as responses to the four items used were not consistent. When three items were taken only to indicate more consistent differences between teachers in this attitude, no significant differences in scale scores were found between those who would stress reading in the infant school and those who would not. The problem of finding a quantitative measure of the basic attitude to reading (after Southgate) remains.

Concerning the supplementary questions posed, it was found that significantly more i.t.a. users prefer 'systematic' phonics compared with t.o. users (x^2 = 6·051, 2 df., p = ·05), but when reception teachers alone are considered, no such significance of difference was found. It would appear that i.t.a. teachers of infants beyond reception class are more likely to prefer 'systematic' phonic instruction compared with i.t.a. reception class teachers, and t.o. infant teachers in general.

The open question concerning courses did not indicate much demand for i.t.a. courses; ten i.t.a. teachers asked for courses dealing with various i.t.a. problems, but only three t.o. users (i.e. 3·57 per cent) asked for courses on i.t.a. It may be noted that 38·2 per cent of the sample did not mention any courses on reading that they considered necessary. This compares with the 1968 finding of Goodacre (1969) in which 33 per cent did not indicate courses desired.

The relationship between headteachers and their teachers attitudes towards i.t.a. was investigated by looking at the data from eight schools where at least five staff had made returns. In six of these, the teachers attitudes reflected the headteachers' attitudes in terms of action tendency towards i.t.a., whilst in two schools responses were more mixed. It is not certain how long the 'dissenters' had been on the staffs as this question was omitted from the questionnaire to avoid teachers considering that they would be too readily identified. In each school there was at least one non-respondent, in one school there were two, and in a further school, nine out of 17 replied. So some corroboration of Southgate's statement, 'Usually the attitudes of teachers reflect, although they do not necessarily mirror, the attitude of the headteacher', was found in these sampled schools.

Discussion

The attitudinal differences between those using i.t.a. together with 'potential users' and those using t.o. and not favouring the use of i.t.a. has been demonstrated. The presence of feeling against i.t.a. on the part of most non-users has been quantified by the study; older t.o. users show more feeling against i.t.a. The variables perceived by Southgate to bear upon attitudes of i.t.a. users towards i.t.a. were not verified in this inquiry, and a greater percentage of i.t.a. users who would not use i.t.a. in a future situation was found than in the Southgate study. These differences may be accounted for in various ways; for instance the contrast between the interview technique used by Southgate and the paper and pencil technique used in this study; the difference in geographical location and timing of the inquiry.

It is hoped that the scales developed in this inquiry may be the basis for further research into the use of i.t.a. in schools. At the present time, the teacher is recognized as the most important variable in research into the efficiency of various teaching methods in reading (Harris, 1969). One of the influences in teacher performances is the attitude towards teaching reading. The inquiry has shown that further research into how this 'basic attitude' may be quantified is necessary. Attitude towards the medium used is another influence on teacher performance; the quantification of three components of attitude towards one of these, i.t.a., has been developed in this inquiry.

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THE SELF-CONCEPTS OF ADOLESCENT EDUCATIONALLY SUBNORMAL BOYS

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AN INVESTIGATION into the self-concepts of one hundred adolescent ESN boys educated in day ESN special schools revealed a level of self-regard comparable to the general population. Analysis of the scoring on the individual items of the self-concept scale indicated however that whilst self-comparisons with the general population had been sought in the self-concept scale, it was the immediate interpersonal environment of the ESN class which appeared to be the effective frame of reference against which the ESN boy assesses himself. Thus whilst the milieu of the special school is providing these boys with a high level of self-regard, the segregated nature of the school is also denying them a realistic appraisal of normal human behaviour.

Introduction

The stereotypical ESN child is late in passing the normal emotional, social, physical and cognitive developmental stages and in some spheres does not even reach the later maturational levels. He suffers from poor health and is further handicapped by other minor physical and neurological defects. His family is situated amongst the lower socio-economic groups and his background is generally one of cultural impoverishment (Gulliford, 1969).

At the ordinary school he has failed so lamentably that he has been singled out from the other children and placed in a special school or class to receive Special Educational Treatment.

The accumulative effect of these 'also ran' or failure experiences and the eventual public recognition of his lowly scholastic status has led to the general assumption that the ESN child will have developed a low opinion of himself—a negative concept of self. Whilst this assumption appears reasonably sound, it remains, in the absence of empirical verification, purely speculative.

This study has attempted to measure objectively the perceived self-concept of a group of one hundred adolescent ESN boys attending day ESN special schools (Lewis, 1970).

The self

Theoretical formulations of the self can broadly be divided into phenomenological (the conscious self-concept) and non-phenomenological (the unconscious self-concept) self-concepts. The non-phenomenal theories based as they are upon the Freudian concept of the subconscious are criticized as being philosophical and clinical rather than experimental and scientific (Kerlinger 1966). As theories they offer interesting hypotheses and pose many philosophical questions, but as yet, they are unable to withstand the scientific rigours of experimental psychology.

Phenomenological self-concepts by definition proclaim the self to be readily perceived by the individual and self-attitudes formed as a result of personal and social experiences (Mead, 1934) are relatively constant (Brehm and Cohen, 1962) and communicable to others (Rogers, 1951). When inconsistencies in reported self-concepts occur research workers have queried the validity of the phenomenological-self and questioned the possible influence of subconscious motivational forces beyond the respondents control. However distortions in reported self-concepts, where they exist, can often be traced to methodological deficiencies, e.g. the form of the instrument used, lack of rapport between investigator and subject, respondent indentification, the provision of responses which the subject considers socially desirable—in fact all those inconsistencies of human behaviour which bedevil research investigations in all the behavioural sciences.

Therefore although conscious attitudes to the self differ from other attitudes in that the object under consideration—The Self—is different for each individual, it is reasonable to assume that the phenomenal self is no less reliable, or scientifically meaningful, or less open to empirical study than other attitudinal objects.

Previous studies

Although self-concept studies of handicapped children appear not to have been undertaken in this country, several self-concept studies of subnormal children have been conducted in America. The approximate equivalent of the British ESN child is termed the Educable Mental Retardate (EMR) and to test the effects of various segregated and integrated educational environments upon the development of these children self-concept measures have been used as one of a battery of tests.

The results of these studies have sometimes been contradictory, but a general pattern has emerged. This shows that EMRs integrated amongst their normal peers scored higher on tests of educational attainment whilst EMRs segregated into special classes, (there are few special schools for EMRs in America) showed higher levels of self-regard.

In one such study (Mayer, 1966) an incidental observation revealed that the mean self-concept score of a large group of EMRs did not differ significantly from the mean of the general population upon whom the self-concept scale was standardized.

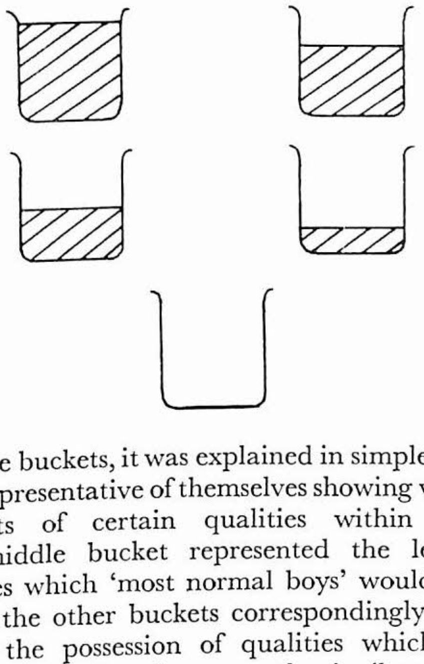
Experimental methodology

The degree of cognitive functioning required to perceive of so complex a concept as the self and the level of communicative skills necessary to describe the self-picture are generally beyond the intellectual capabilities of the ESN child. It followed that most of the available self-concept scales were unsuitable. They were generally beyond the comprehension levels of the ESN boys and frequently, being paper and pencil tests, demanded literacy standards far above those of the children to be studied.

It was necessary then to devise a technique which was within the understanding of the ESN pupils and also one in which they could participate fully. After much experimentation with various self-concept measures and presentational techniques, it was decided to use an orally presented, graphically recorded adaption of the Lipsitt Children's Self-Concept Scale (1958). This scale measures the self-attitudes of children on twenty-two personality traits. Pilot studies led to the omission, substitution and modification of some of these traits until a list of twenty trait-descriptive adjectives within the comprehension of the ESN child was established. These were:

> friendly, happy, kind, honest, popular, reliable, good, proud, lazy, thoughtful, polite, jealous, obedient, clean, clever, handsome, sensible, grateful, useful, 'nuisance'.

The subjects were presented with response sheets which portraited twenty-four rows of five 'buckets' showing various quantity levels.



These buckets, it was explained in simple terms, were representative of themselves showing varying amounts of certain qualities within them. The middle bucket represented the level of qualities which 'most normal boys' would have, Whilst the other buckets correspondingly represented the possession of qualities which were 'more than', 'much more than', 'less than', and 'much less than‘ most ordinary, normal boys.

After a four-adjective introductory trial in which the relevance of the 'buckets' was emphasized, the twenty adjectives were presented orally. The subjects, who were in small groups, then responded by ringing the bucket most appropriate to their response need.

A control group of one hundred boys matched for age and home locality was drawn from the middle ability streams of three large comprehensive schools.

Scoring on a five-point scale with positive responses high (i.e. full bucket=5, empty bucket=1.) a total self-concept score was obtained for each ESN and 'average' boy. The scores of the ESN boys were ranked in order and additional data relating to the upper (N=25) and lower (N=25) quartile groups obtained from child, teacher and school document sources.

Results

The mean self-concept scores of the ESN and academically 'average' groups were 74·81 and 64·46 respectively. The statistical difference in means is highly significant ($p<0{\cdot}001$).

Table 1: Mean scores on the individual scale items

ESN group		*'Average group'*	
grateful	4·15	grateful	3·53
clean	4·08	happy	3·40
thoughtful	4·02	jealous	3·39
happy	3·97	thoughtful	3·36
polite	3·97	friendly	3·35
friendly	3·94	reliable	3·32
kind	3·93	clean	3·30
useful	3·92	useful	3·30
reliable	3·86	sensible	3·27
sensible	3·82	lazy	3·23
proud	3·77	'nuisance'	3·23
good	3·68	kind	3·20
popular	3·62	polite	3·18
handsome	3·62	good	3·13
honest	3·60	honest	3·13
obedient	3·50	proud	3·11
clever	3·48	obedient	3·11
jealous	3·39	popular	3·04
'nuisance'	3·23	clever	3·02
lazy	3·17	handsome	2·86

rho=0·503

The second part of the study was concerned with identifying variables related to high and low self-concept scoring groups of ESN boys. Of twenty-seven variables examined, only age of admission and length of special schooling were found to relate to level of self-regard.

Table 2: Number of years in ESN day schools and self-concept ranking

	Five years and more	*Less than five years*	*N*	*Mean self-concept score*
Upper Quartile	17	8	25	87·92
Lower Quartile	8	17	25	62·88
	25	25	50	

$\chi^2=5{\cdot}02$ d.f.l. $p<0{\cdot}025$

Table 3: Age upon admission to special school and self-concept ranking

	5–10 years	11–13 *years*	*N*	*Average age*
Upper Quartile	23	2	25	8·4 yrs
Lower Quartile	14	11	25	9·5 yrs
	37	13	50	

$\chi^2=6{\cdot}64$ d.f.l. $p<0{\cdot}01$

Discussion of results

Whilst the centrality of the self remains relatively stable (Brehm and Cohen, 1962), there are undoubted momentary, situational adjustments of the self-picture. With the varying demands of situational determinants, self-attitudes adjust and adapt to the prevailing environment. Thus different facets of the self are emphasized according to the dictates of the current social situation (Goffman, 1969).

The conditions under which this experiment was conducted were necessarily school based, therefore the phenomenal field of the subjects was surely scholastically centred also. The environmental factors of the experimental situation would therefore tend to enhance the latent and prevailing orientation towards the perception of a 'school-boy' facet of the concept of self. This 'school-boy' self-image is therefore the particular concept of self which this study measures.

If, as James (1890), Mead (1934), Cooley (1902) and Sullivan (1953) claim, the concept of self is determined by the sum total of all perceived social communications, and adjustments in the self-concept are due to situational demands, it follows that the prevailing concept of self is largely influenced by the 'significant others' pertinent to that situation. The self-concept scores obtained from the subjects are therefore measures of the particular 'school-boy' 'self images' which have been influenced by the schools over a period of years.

To consider oneself as an 'ordinary, normal boy' a mean self-concept score of approximately sixty might reasonably be expected (20 x 3=60). And if ESN boys had negative self-concepts, scores less than this would be evident. However their mean score of 74·81 reflects a positive self-concept and a high level of self-regard. As the self-concept scale used in this study is an adaption of the Lipsitt CSCS a statistical comparison with the mean of the standardization population is meaningless. However, an interpolated score for a twenty-item Lipsitt scale revealed a mean score of 78·4 which closely approximates to the mean of the experimental population. This is an indication that the self-picture of the ESN boys on the traits measured in this study, compares favourably with the general population and dispels the notion of attitudes of inferiority amongst these children. Such a result accords with Mayer's (1966) observation.

A perusal of Table 1 indicates that although on many of the scale items ESN boys are likely to score as would normal adolescents (e.g. happy, grateful), equally there are some items in which they clearly cannot consider themselves as comparable to other 'ordinary, normal boys' (e.g. clever, sensible). It would appear therefore that either the ESN boys were:

1. deliberately falsifying their responses (e.g. compensatory behaviour, socially desirable answers); or
2. had mis-interpreted the instructions.

My experience with ESN children, personal knowledge of some of the boys and my observations of their approach to the experimental situation led me to believe that there was no mass attempt to deceive me. Further, the objective re-testing of small groups of these boys some three months later confirmed these opinions and also eliminated the possible influence of a response set. Rather it would appear that the middle 'bucket' of the response sheet which represented 'most ordinary normal boys' had been interpreted as the average ESN child and not the 'ordinary boy' within the general population. In other words, broader more complex socio-cultural standards had not been perceived and the effective frame of reference against which actions and performances were measured and a relative status determined was the immediate interpersonal environment of the ESN classroom.

It would appear then that whilst the day ESN special school provides a sympathetic, controlled environment in which self-confidence and self-regard are successfully nurtured, the segregated nature of the school is also providing an unrealistic yardstick of human behaviour.

Tables 2 and 3 indicate that the sooner the ESN child enters the ESN school and the longer he spends there the more likely he is to have a high level of self-regard. This is probably due to the reduction of time spent in a progressively scholastically orientated normal school milieu where his limitations are increasingly highlighted, and the extension of the period of SET received in the special school amongst similarly handicapped children.

Whilst accepting that the ESN day special school class is not the only reference group to which the ESN child relates himself, it is worth remembering that the two most potent sources of influence, the family and the peer group, set standards of behaviour which do not differ appreciably from the demands of his ESN classmates. Thus the ESN child, coming mainly from culturally deprived areas, mixes again with children of similar social and educational backgrounds in an environment geared to low levels of expectation which ensure a high degree of success. In such a milieu a high level of self-regard is hardly a surprising discovery despite the common assumption of widespread self-denigration.

Clearly a positive self-concept is necessary to ensure a satisfactory state of mental health, but equally a realistic awareness of the normal workaday world is also appropriate. How this can be achieved without undermining the morale of the ESN child will not be attempted here but to prevent that devastating shock to the psyche which many ESN children experience upon entering employment and from which a few appear never to recover, a reassessment of the role of the day ESN special school is due.

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SUBJECT CHOICE IN THE SIXTH FORM: A CRITICAL REVIEW OF RESEARCH

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THIS ARTICLE reviews in depth six major researches in the field of subject choice in the sixth form. It is repeatedly shown that whereas it has been tacitly assumed that most sixth-formers were interested in studying three traditionally associated subjects either in arts or science this may be a fallacy. Whilst several studies revealed that, if able to make a 'free' choice (especially with regard to a fourth subject) unconstrained by consideration of 'A' level requirements, substantial numbers of both predominantly arts and science students would opt for a mixed ability arts/science combination, there are a number of critical considerations which suggest that these results should not always be taken at their face value. Moreover, despite the fact that they covered a wide spectrum of school types and several age ranges (fifth- and sixth-formers), in no study could the results refute the hypothesis that the *most able* sixth-formers are one-sided in their subject interests.

Subject choice in secondary schools—and especially at the stage of entry to the sixth form—is a process about which little is at present understood. It may be accepted that with few and possibly no exceptions pupils neither like all subjects equally nor are equally successful in them. The precise interaction between enjoyment (or interest) and success, and how this in turn is linked to the school organization and other determinants of subject choice, remains a matter of legitimate speculation. Limitations *per se* on the number of subjects for serious study in the sixth form may be accepted without demur. Yet the limitation to three cognate subjects, all on either the arts or science side, has a less obvious appeal. The belief that this accords with the genuine interests of most sixth-formers may be mistaken. The Report of the Central Advisory Council for Education (1959) supposed the phenomenon of 'subject-mindedness'—defined as an interest in studying not more than three traditionally associated subjects—to apply to all able sixth-formers. The lack of evidence for this was pointed out by Peterson, whose work is now described.

The Peterson study

The Peterson study (Oxford University Department of Education, 1960) was designed primarily to probe the extent of the arts/science division among sixth-formers, and to see how far this represented their genuine interests.

A questionnaire administered to pupils in their first term of sixth-form study asked them to state the subjects they were actually taking for the 'A' level examinations and also the subjects they would have selected under a free choice. It was pointed out that outside requirements such as university entrance might largely determine the combination of subjects actually taken, and pupils were asked to choose three subjects on the assumption that no such requirements existed. They were also asked to select one further subject on the assumption that all would have to study a fourth subject, but that this would not be examined. The replies from sixth-formers in a stratified random sample of boys', girl's and co-educational schools (2,822 replies in all) showed a marked contrast in pattern as between the first two questions. Whereas the percentages taking for the 'A' level examinations (i) arts subjects only, (ii) science (including mathematics) only, and (iii) a mixed arts/science combination were (rounded to the nearest integer) 44 : 49 : 6 respectively, the corresponding figures for a free choice were 37 : 23 : 40. Substantial numbers of arts and (more especially) science specialists would have preferred a mixed arts/science combination, in contrast to the relatively small numbers actually taking such combinations. When the fourth subject is included the preference for a mixed combination becomes even more pronounced, particularly among science specialists, some 75 per cent of whom now choose an arts subject. Results such as these would seem to challenge the traditional belief of interests among sixth-formers exclusively on either the arts or science side. A number of considerations however suggest that they should not be accepted at their face value.

Firstly—and this is a limitation frankly acknowledged by Peterson—there is a limited number of subjects that can be chosen, especially on the science side. Thus a person choosing two subjects from mathematics, physics, chemistry and biology would have only two science subjects left for a third choice but the entire range of art subjects would be available. For a person choosing two arts subjects, on the other hand, the choice of a third subject from among the arts and sciences is more even. The restriction of choice among the science subjects becomes even more severe, of course, when a fourth subject has to be selected.

A second criticism is one relating to the fourth subject choice, namely that this is a subject with no examination requirement. This formulation would tend to place the fourth choice apart from the other three as a subject not to be taken seriously. Thus, many of the mixed options might still be the choices of persons committed in interests to a study in depth of subjects all on either the arts or science side. It would be better if all subjects were chosen on the same basis, and if sixth-formers had the option of choosing only three.

A third criticism is one of classification. All subjects other than mathematics and the sciences are classified as arts, so that for instance sixth-formers taking geography, economics and history would be counted as arts specialists. The proportions of arts specialists, both actual and under free-choice conditions, are thus spuriously raised, though not necessarily to the same extent.

A final limitation follows from the questionnaire being answered anonymously. The sixth-formers choosing mixed combinations were not identified, so no refutation can be made to the charge that these might, on average, be less able than the others. In other words subject-mindedness as a characteristic of the *able* sixth-former is not disproved.

Some indication of the relevance of this objection might have been forthcoming from an analysis of the response to other questions, however, especially to those asking for reasons why the actual 'A' level subjects were selected, and whether the respondent intended to obtain academic qualifications beyond 'A' level.

The Lewis study

Lewis's investigation (1963) was designed as a follow-up of Peterson's and as one which would remedy at least the second and third of the weaknesses described above. Thus, a modification of the Peterson questionnaire was used in which respondents were not limited in their choice of 'A' level subjects, and could name either three or four. They were also asked in a supplementary question to select a fourth subject, if they had not already done so, on the assumption that everyone had to take four. In all cases, however, the fourth subject was held to be of equal status to the other three. A more detailed analysis of the differences between the subject taken and chosen (under free-choice conditions) was carried out, special attention being given to the categories of (i) *complete agreement*—identical sets of subjects taken and chosen, (ii) *incomplete agreement*—all subjects taken being chosen, but with an additional 'cross-over' subject also chosen, and (iii) *disagreement*—one or more subjects taken not being chosen, with a 'cross-over' subject preferred instead. Only English literature, history and the classical and modern languages were treated as arts subjects. The questionnaire was answered by sixth-formers in 23 grammar schools in Northern Ireland, 730 sixth-formers in all.

The disparity between the 'A' level subjects taken and those chosen was brought out by the relatively small numbers in the category of complete agreement—only 28 per cent of the science specialists and 29 per cent of the arts. The pressures acting on pupils to take subjects other than those they really wished to select were confirmed as very real. The figures underestimate the extent to which arts and science sixth-formers are content with their specialism since not all the subjects chosen, but not taken, cross the arts/science divide. Some five per cent of science specialists chose an additional science subject, and 12 per cent of arts specialists an additional arts subject, so giving 33 per cent of all science specialists and 41 per cent of all arts specialists as content with subjects all on one side of the divide. (These results, it should be noted, were derived from the replies to the first question, that of selecting either three or four subjects without external restriction. Replies to the 'compulsory fourth subject' question were not included.)

The extent to which 'cross-over' subjects were chosen appear from combining categories (ii) and (iii) above, and show that 44 per cent of the science and 19 per cent of the arts sixth-formers chose such subjects under free-choice conditions. Generally, Peterson's findings were confirmed, though at the same time a substantial core of arts specialists, whose subject interests did not extend to mathematics and the sciences, was found. Again, the largest group of sixth-formers consisted of those who would have included both arts and sciences in the subject combination of their choice. The study does not refute the hypothesis that the best sixth-formers are one-sided in the subject interests, and, of course, the Central Advisory Council report makes no more general claim. A further point is that the questionnaire was administered, as in the Peterson study, during the first term of the sixth-form course. The time of administration might itself be a variable of some importance.

The Wilkinson study

The significance of Wilkinson's study (1967) derives from the fact that it combines an assessment of the diversification of subject choice with that of the ability of the pupils concerned. A further difference from the preceding investigations is that the study is based on the choices of fifth-formers as to the subjects they would subsequently take in the sixth.

Fifth-formers from four grammar schools (one independent, one maintained and two direct grant schools) in the north of England were asked to state (i) the subjects they enjoyed the most, (ii) the subjects in which they expected to get the best results, and (iii) four subjects they would like to study in the sixth-form and offer at 'A' level given that there were no outside requirements to meet. The link with ability was provided by taking the 'O' level grades attained by the pupils. Again, the 'ideal' choice of subjects—that given in response to (iii) above—was compared with the actual choice made on entry to the sixth form.

It was found, not unexpectedly, that under a free choice, pupils displayed a strong tendency to choose the subjects they enjoyed most, though to an almost equal extent this choice was related to their (self-rated) ability in the subjects concerned. The most frequent free-choice combination was mixed (52·5 per cent) followed by arts (40 per cent), and science (7·4 per cent). This contrasts with the frequency of the actual choices subsequently made: arts (66 per cent), science (21 per cent), and mixed (13 per cent). In these classifications mathematics was as before grouped with science, while general studies was excluded. While the pattern of results accords with that of the Peterson and Lewis studies, it should be noted that the insistence on naming four subjects has almost certainly inflated the number of mixed (free-choice) combinations and depressed the numbers otherwise opting only for science.

Ability groupings of *good*, *average* and *poor* were made on the average 'O' level grade obtained. In all three groups those wishing to take a mixed combination were in the majority although a slight (and non-significantly) smaller percentage of *good* pupils opted for a mixed combination.To this extent some (limited) support for the linkage of subject-mindedness with high ability may be claimed. More important, however, would seem to be the argument that performance at 'O' level is not a sufficiently valid guide to academic quality. 'A' level grades would provide a better criterion, or alternatively, performance on a scholastic aptitude or high-grade intelligence test.

The Hudson studies

The work of Hudson (1963, 1966) is noteworthy as one of the few systematic attempts to predict subject choice—or at any rate the broad arts/science divide—by means of psychological tests. In his earlier publication, prediction solely from conventional, largely multiple-choice tests was attempted. Later it was argued that an arts/science discrimination is more strongly connected with the disparity in performance between two kinds of tests, the conventional objective test and the 'open-ended' test (Getzels and Jackson, 1962). Those performing relatively better on the former kind of test are defined as *convergers*, and those performing relatively better on the latter as *divergers*. More explicitly, convergers and divergers are the extreme 30 per cent of the difference (conventional minus 'open-ended') continuum, the middle 40 per cent being 'all-rounders'. Hudson's main finding was that arts specialists are, in the main, divergers, and that physical science specialists are convergers. Between three and four of the divergers of Hudson's samples take arts for every one taking physical science, and between three and four of the convergers take physical science for every one taking arts.

Arts in this context refers to English literature, history and modern languages. It does not include classics which was found to be more attractive to convergers. Biology, together with geography and economics, are excluded from the polarity, all being found to attract convergers and divergers about equally. In a further study (1968) Hudson imparts to the converger/diverger distinction a sociological flavour—it now becomes a distinction between sub-cultures—without, however, offering further evidence of its relation to subject choice.

The samples on which this super-structure is based are fourth-, fifth- and sixth-formers from eight schools, five of them public boarding schools and all of high academic standing. IQ was assessed by the AH5 intelligence test (Heim, 1967), and the two open-ended tests were *Meanings of Words*, in which one is asked how many meanings one can think of for words such as 'bit', 'bolt', and 'duck' (ten words in all), and *Uses of Objects*, in which one has to think of as many different uses as possible for everyday objects such as a barrel or paper clip (five objects in all). No questionnaire from the Peterson mould was administered. Neither were the subjects taken distinguished from those chosen under free-choice conditions. The specialisms of the pupils were, for the most part, accepted at their face value. Occasional probings were made. Thus, one pupil is reported as 'doing the wrong subject' (Hudson, 1966, p. 27), and two others—physical scientists, who were also extreme divergers—were found to be interested in architecture (op. cit., p. 157). Such selective reporting, however, does not inspire confidence. The extent to which the samples as a whole were satisfied with their 'A' level subject combinations is not known. It is possible that in the rather special set of schools selected the favourable staffing ratios and other facilities result in proportionately fewer sixth-formers being dissatisfied with their subjects and wishing to take mixed combinations. Evidence that this is in fact so would be welcome.

Apart from this defect it seems doubtful if the converger/diverger bias can by itself account for more than a small portion of the variation of subject choice. The bias is curvilinearly related to the general level of ability—assessed as total performance on IQ plus open-ended tests—in so far as it can not occur at the extremes. (A high ability level occurs only with high scores on both types of test: similarly, a low ability level is possible only with low scores on both types of test.) The outstandingly able are excluded from both the categories of converger and diverger, and are included instead, together with those of relatively low attainment on both types of test, in the category of all-rounder. At best the converger/diverger variable can predict only for some. It is also possible that the specialization imposed on pupils both in and before entry to the sixth form is the cause rather than the effect of converger/diverger differences, as has been pointed out by Butcher (1968, p. 109). Clearly, Hudson's work requires, and indeed deserves, replication and supplementation, and especially in schools where extreme arts/science specialism is not the rule.

The Ormerod study

In contrast to the independent, highly selective schools sampled by Hudson, Ormerod's study (1969) was conducted in nine Lancashire grammar schools all homogeneous in respect of the proportion of the age group selected (about 20 per cent). Following Wilkinson, he obtained an assessment of ability, but this was now a concurrent assessment, that given by Heim's AH5 test. This was administered to his sample of over 400 first-year sixth-formers together with a personality inventory,—the EPI (Eysenck and Eysenck, 1964), and a subject-choice questionnaire of the Peterson-Lewis type. The percentage of those taking science, arts and mixed combinations were 33, 46 and 21 respectively.

In contrast the corresponding figures for the 'ideal' choices were 13, 34 and 53. The disparity is seen to be particularly marked for science specialists, substantial numbers of them expressing a preference for a mixed combination. Ormerod comments that the increased tendency (compared with earlier studies) for sixth-formers to take mixed courses is paralleled by an increase in the proportion of those wishing to do so given a free choice.

A breakdown of each of the science, arts and mixed groups into those whose 'ideal' and actual choices are in the same category ('satisfied' sixth-formers) and those whose choices are not ('dissatisfied' sixth-formers) showed no significant difference on AH5 mean score. Within the science group the mean score of the satisfied boys was slightly higher than that of the dissatisfied boys, but for the girls this position was reversed. Differences within the arts and mixed groups were negligible. Clearly, the proposition that it is the intellectually weaker who in the main lack a one-sided commitment to arts or science studies derives no support from Ormerod's results. On the contrary, the results suggest that one-sided commitment is unrelated academic potential.

The science group as a whole obtained a significantly higher mean score than the arts group, and on both the verbal-numerical and diagrammatic sections of the AH5 test. This, it may be argued, indicates a superior level of ability for the scientists, or, alternatively, a greater partiality for convergent thinking (no assessment on an 'open-ended' test was made).

Interesting group differences were revealed from the responses to the personality inventory. Thus, the science specialists appeared less neurotic than the arts, and in the case of the boys more introverted. (Girl scientists, on the other hand, were on average slightly more extroverted.)

The dissatisfied arts boys appeared more introverted than the satisfied, so suggesting a personality pattern underlying subject choice. Ormerod also reports, however, an interaction between personality variables, course satisfaction and type of school (single sex versus co-educational), so further studies in this field are clearly needed.

Another finding of interest is the relatively small numbers including General Studies as a subject of their choice. This, it seems, has failed to establish itself as an attractive option in the schools sampled.

In summary, the main value of Ormerod's study would seem to be the evidence of independence between exclusive commitment to arts or science study and ability (as assessed by a conventional 'convergent' intelligence test), together with that of a possible pattern among certain personality variables. Again, replication of the study in other regions would be valuable.

The McNair study

McNair (1970), like Wilkinson, obtained 'A' level subject choices from his sample when they were still in the fifth form, and an interesting variant of his questionnaire is that no reference to free-choice conditions is made. Pupils were simply asked to state the subjects they would choose to study in the sixth form. The number was limited to three, though a subsequent question asked for one or two additional subjects on the assumption that there was no limitation. McNair probably considered that further confirmation of the difference between subjects taken and chosen under free-choice conditions explicitly stated in the questionnaire was unnecessary. McNair compared the choices put forward with those subsequently made and a very close agreement was found here. A second questionnaire, administered to the same pupils some two years later when their 'A' level courses were completed, probed the extent of satisfaction with their choice.

This differed further from previous studies in that a wider, more flexible, definition of a science combination was adopted, so that those taking two sciences (or mathematics and a science) plus any other subject were counted as science specialists. On the other hand, an arts combination was more narrowly defined so that two social studies (e.g. geography and economics) together with, say, English literature, would be counted as a mixed combination. The effect of these differences in classification renders precise comparisons with other studies difficult.

McNair's questionnaire was answered by over nine hundred pupils from 15 grammar schools (5 boys', 5 girls' and 5 co-educational schools) in the Manchester area. The subject choice of 40 per cent of these were classified as science, 33 per cent as arts, and 27 per cent as mixed. These figures, however, conceal considerable variations between schools. Apart from the expected sex difference (boys being more likely than girls to choose science) a greater polarization was found in co-educational schools (boys in such schools being more likely, and girls less likely, to choose science as compared with those from non-co-educational schools). Again, a significantly smaller proportion of those from co-educational schools chose mixed combinations.

Another finding of importance was that proportionately more of those choosing mixed courses made their choice late (in the fourth or fifth school year). Also proportionately more of the mixed course pupils came from families of lower social class (as defined by the Hall-Jones scale).

A factor analysis of the subject-choice responses in conjunction with those to personality and interest items showed that neither the bipolar arts/science nor mixed-choice factors extracted has significant loadings on any of the personality items. No single pattern could 'type' the choice groups which emerged.

It is of interest, too, to find that McNair included in his questionnaire a 'personal qualities' section, consisting of items previously tried out by Hudson (1966 pp. 167-9). Items from three scales—authoritarianism, rigidity and social conformity—all found by Hudson to discriminate between convergers and divergers—were chosen. The scales did not, however, distinguish between pupils of arts and science choice.

Concluding discussion

In this review of research into subject choice in the sixth form an emphasis has been maintained throughout on the distinction between the set of subjects actually selected for specialist study and the set (usually overlapping with the first, but not necessarily identical) that would have been selected under a free choice. Many are reluctant to accept such a distinction. Their reluctance springs from a distrust of questionnaire data *per se*—or at any rate when the findings conflict with their pre-conceptions (see, for example, James, 1960). Others will accept that the distinction has a theoretical validity but argue that it has little practical consequence. Evidence from a study of the Foundation Year at the University of Keele (Iliffe, 1968), however, suggests that the expressed preference of sixth-formers might well, under appropriate circumstances, be translated into action. In any case investigators engaged in empirical studies into the psychological and other concomitants of subject-choice can ignore the actual free-choice distincion only at the risk of superficiality. Such a distinction, too, would seem to be implicit in the recommendations of the Report of the Council for Scientific Policy (1968)—the Dainton Report—which, while drawing attention to the declining proportions taking science and mathematics during the past decade (though, as they point out, the actual numbers show little change), make specific recommendations for arresting this decline. The presumption is that the interest of some sixth-formers would have been better served if they had chosen differently.

Schools differences, both in the subjects selected and in the extent to which they accord with free choice, are very considerable. Substantial components of this variation may be assigned to school types, for example, co-educational *v.* single-sex schools (McNair, 1970) and independent, direct-grant and maintained schools (Phillips, 1969). Even so, the greater portion of these between-school differences remain *within* school type, and are almost certainly greater than corresponding differences in the socio-economic nature of the catchment area. It is when one speculates on possible reasons for this that differences in teaching quality (as between different subjects, from school to school) require consideration. Here it must be said that while teaching quality might well qualify *prima faci* at the top of any list of major variables many investigators (e.g. Kelly, 1959; Meyer, 1959; Rowlands, 1961) have found its influence to be minimal. On the other hand Pheasant (1961) found the negative effect of noticeably indifferent teaching to be considerable, while McNair (1970) reported that a lack of class control was the most frequent adverse comment. It is probably fair to conclude that provided a minimum level of competence has been attained the effect of further improvement in teaching quality is marginal.

Of far greater significance, probably, is the balance of power within the school (both inter-departmental and intra-departmental) as perceived by the pupils. This will vary considerably from school to school, depending partly on tradition and partly on the personalities of the head-teacher and senior staff. The middle school alternatives available—some of which may be little more than disguised streaming—together with the incomplete range of options offered in the sixth are relevant factors here. McNair aptly comments that pupils' awareness of all this can far exceed that of a visiting researcher.

In the final analysis of school differences in the teaching of subjects, organization and ethos are themselves dwarfed by the differences of subject choice displayed within the schools. It is the different choices made by pupils in the same school that must ultimately be resolved. It is within this context that further studies should be planned.

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EFFECTS OF CO-OPERATION AND COMPETITION ON PUPIL LEARNING

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AN ASSESSMENT is made of the conflicting claims that either co-operation or competition between pupils facilitates pupil learning. Various empirical investigations into the effects of competition and co-operation over a wide age and subject range are reviewed. There is evidence that where co-operative interaction has been shown to have taken place in joint or associate work with co-operative tasks pupil learning increases. In addition, three characteristics of co-operative groups, cohesion, heterogeneity of ability and size, were examined in relation to pupil learning. Experiments have shown that the effect of competition on any competitor's performance is not independent of the performance levels of his fellow competitors. Results from several investigations suggest that although competition between indivuduals can result in more efficient learning than group competition it is more effective when joint co-operation occurs.

The effects of co-operation and competition on classroom learning have from time to time been a topic of discussion in educational psychology. Several writers have claimed that co-operation between pupils facilitates pupil learning (McKeachie, 1958; Oeser, 1960). Competition between pupils has been the subject of conflicting claims, some writers opposing it (Combs, 1957) while others (Coleman, 1959) claim that greater use of competition could improve the learning of pupils. The purpose of this paper is to make an assessment of these claims by reviewing and interpreting empirical investigations on the effects of co-operation and competition on the learning of school pupils.

Pupil co-operation

Experimental studies have usually examined simple comparisons of the effects on pupil learning of two conditions:

1. an 'individual condition' in which pupils do not have opportunity to engage in interaction relevant to accomplishment of the learning task, the pupils usually being described as 'working individually'.
2. a 'co-operative condition' in which pupils do have opportunity to engage in interaction relevant to accomplishment of the learning task. Such interaction, for example, may be exchange between pupils of information about the learning task; correction by one pupil of another pupil's attempt; sharing of the task.

The co-operative conditions divide into two subclasses. In the first subclass, the group, not each individual, is required to produce one result or outcome for the learning task. This form of organisation is often called 'group work'. However, as Evans (1966) points out there is liable to be confusion between numerous meanings assigned the terms 'group' and 'group work'. For purposes of exposition this first subclass will be called the *joint co-operative* condition. Comparisons of the joint co-operative condition and the individual condition have been made by Hallworth (1955) who investigated the effects of the two conditions or learning of regional geography by fourth-year grammar school pupils over an instructional period of a school term; by Hudgins (1960) who studied effects on learning problem arithmetic by fifth-grade children over three lessons; by Noble (1967) who studied effects on learning trigonometry by fourth-form secondary modern pupils over eight sessions of programmed instruction; and by Amaria *et al.* (1969) who investigated effects of the conditions on first-year secondary school pupils' learning of the principles of levers from programmed instruction over three sessions. All four studies gave the same result; no significant differences between the condition in mean post-test learning scores.

In the second subclass of co-operative conditions, pupils are given the opportunity of interacting in task-relevant ways, e.g. exchanging information, helping one another, but each pupil is required to produce his *own* learning task result or outcome, which outcome may well differ from those of the pupils with whom he is given opportunity of interacting. One example of this organisation of interaction is the 'pupil helper' system. For instance, with pupils learning to read, one pupil may be encouraged to ask another for assistance with unknown words. Let this be called the second subclass the *associate co-operative* condition. Comparisons of the associate co-operative condition and the individual condition were made by Banghart and Spraker (1963) in a study in which seventh-grade children were instructed in a creative approach to mathematical concepts, and by Sawiris (1966) who investigated effects on the learning of geometry in a single session of programmed instruction to third-form pupils of a technical secondary school. The results of both studies showed no significant difference in mean post-test scores between the individual condition and the associate co-operative condition.

Experimental evidence would thus appear to show that co-operation between pupils, whether joint or associate, results in neither greater nor less learning than is the case when pupils are working individually. However, critical interpretation of the evidence indicates that this conclusion may be unwarranted. The studies reviewed have not provided evidence that co-operative interaction did take place between the pupils under the co-operative conditions. Or alternatively, no study provided evidence that there was more co-operative interaction taking place between pupils in the co-operative condition than in the individual condition. Typically, in the co-operative condition pupils were given instructions to 'do the task together' or to take opportunity to help one another, which instructions were intended to bring about co-operative interaction between the pupils. The success of the instructions in so doing was not established in the studies reviewed. It is possible that even in the joint co-operative condition the learning tasks could be completed by one member of the group with the other pupils merely looking on. This is not what is meant by 'co-operative interaction'. One study, however, is an exception. Hudgins (1960) made some descriptive observations of the pupil interaction that took place under a joint co-operative condition for fifth-grade lessons on problem arithmetic. The interaction apparently took varying forms, only some of which could be classed as 'co-operative interaction'. In some groups one pupil worked out the problem and demonstrated the result to the others. In other groups pupils worked individually until they obtained a result which was different from that of other pupils, at which time the problem was discussed among the pupils. There was no difference between the co-operative condition and the individual condition in effects on pupil learning. Nevertheless, the study shows that instructions which defined the 'co-operative' condition *can* result in co-operative interaction actually occurring between pupils. However, it may be unwarranted to suppose, without evidence, that this also happened in all the other studies.

Co-operative Tasks

In all investigations reviewed so far, the learning tasks were possible for pupils to accomplish by working individually without any interaction between pupils. The nature of the *tasks* placed no restraints on interaction between pupils. There may have been co-operative interaction, no co-operative interaction, or no interaction at all. Learning tasks which can be performed either with or without co-operative interaction between pupils will be designated 'IC' tasks.

Tasks which can be accomplished *only* by means of co-operative interaction between pupils will be designated 'C' tasks. Examples are a pupil committee meeting; most drama; and many simulation games. C tasks cannot be accomplished individually. If a C task has been performed, then there has been co-operative pupil interaction. This is not necessarily the case with IC tasks.

A third type of task, 'I' tasks, are those which can be accomplished only by an individual, any attempt at co-operative interaction between pupils being irrelevant to the task. I tasks are of a personal or introspective nature. The following instructions to pupils would represent I tasks: 'Write what you feel as you listen to this music'; 'Describe your experiences when you were lost alone in the forest'. Performance of I tasks cannot be directly facilitated by co-opertaive interaction and therefore lie outside the concerns of this review. Comparisons of learning efficiency have been made between the C task and a comparison task not of the C type. Baker (1968) in a study of the learning of United States history by eighth-grade pupils compared a 'lecture and discussion' condition with a condition which combined lectures and discussion with a simulation game. In this game pupils played roles of 'leading officials' in various parts of the United States during a historical period. The game required co-operation between the 'officials' and hence between the pupils playing their roles. The study continued over three weeks and total instructional time was equated between the conditions. An immediate post-test showed that there was greater learning by the condition which included the C task. However, a retention test six weeks later showed a smaller and unreliable difference between the two conditions. Included in MacKinnon's (1959) study of first-year reading instruction of five-year-olds is a comparison of a condition in which individual children practised reading when alone with the teacher and a condition in which the teacher supervised a group of pupils in which each pupil took turns at reading while the other pupils followed the reading. This latter condition necessitated some interaction between pupils and is therefore, at least in part, a C task. The experimental conditions continued for one session a week over a period of ten weeks and instructional time was equated between the two conditions. A post-test showed greater learning by pupils under the C task condition. Thus for C tasks, where it is known that co-operative interaction does in fact take place, there is evidence from the two studies available, of facilitation of pupil learning.

Characteristics of co-operative groups

Several pupils engaged in task-relevant interaction with one another may be said to form a co-operative group. The characteristics of such groups has been the subject of study in a small number of experimental investigations. The question asked in these studies is: What variations in the characteristics of the group affect the learning of the pupils in the group? Three characteristics of groups will be examined: cohesion, heterogeneity of ability, and size.

Cohesiveness of the Group

This is a characteristic which has received considerable theoretical attention by sociologists. Unfortunately, there are major difficulties in defining the concept of group cohesion. It has been variously conceptualised as (a) forces maintaining the existence of the group or keeping the individuals within the group; or (b) attractiveness of the group to its members, where this may result from attraction to the other members of the group, attraction to the task in which the group is engaged, or the prestige which the group has to non-members (Gross and Martin, 1952; Albert, 1953). Rather than being an unitary concept, 'cohesion' is probably a constellation of group properties for which no single operational index is really adequate. Although open to criticism, it has been common practice to use the single index of attraction between members of the group, or friendship relations. Sociometric techniques are thus often employed to derive an index of 'cohesiveness' of a group.

Does variation in the cohesiveness of co-operative groups have any effect on the efficiency of learning of the individual pupils in the group? Lott and Lott (1966) examined the effect of variation in the cohesiveness of groups upon performance of a C task involving rote verbal learning. The groups were three and four and five-member same-sex groups of grade four pupils and were formed on the basis of sociometric results. High cohesive groups were formed with high mutual positive attraction between members and low cohesive groups with low positive attraction between members. The girls of higher intelligence (mean IQ 121) in the high cohesive groups learned in less time and had better retention scores than those in the low cohesive groups. No such differences were obtained for the girls of lower intelligence (mean IQ 99), nor for the boys of either intelligence level. It should be noted that this experiment was conducted for only one learning session and the results are thus very limited in generality.

An IC task of learning spelling words by groups of grade two pupils under the associate co-operative condition was studied by Shaw and Shaw (1962). The groups were of three members and were formed to provide different levels of cohesiveness on the basis of sociometric results. The experiment continued over three consecutive days. Individual learning scores on the second day tended to be higher in the high cohesive groups than in the low cohesive groups, but by the third day there was no relationship between individual learning scores and the level of cohesion of the group within which the individual worked. There are further relevant results in a study by Taylor (1959). In this study of an IC task of learning high school biology there was a treatment in which 'friendship groups' were formed and another treatment in which groups were formed randomly. The former could be expected to be more highly cohesive than the latter. The study continued for the duration of the school year. There was no significant difference between the treatments in the learning attainment levels of the pupils. Thus, at least within the range of variation of levels of group cohesion examined in these experiments, there is some evidence that the learning of pupils is independent of the level of cohesion of the group in which the pupils conduct their learning. As two of the studies show, there may be an advantage for pupil performance in the high cohesive groups when these are initially formed, but any such effect appears to be of very short duration.

Heterogeneity of Abilities within the Group

The question examined under this heading is whether learning of individual pupils is affected by variation in the heterogeneity of ability levels of the pupils composing the co-operative group. Amaria *et al.* (1969) have investigated this question in a study using an IC task which consisted of learning the principles of levers in three sessions of programmed instruction in two-member same-sex co-operative groups. The subjects were first-year pupils in an unstreamed secondary school. The homogeneous groups comprised pupils either both above or both below average intelligence. The heterogeneous groups each contained one pupil of above average and one of below average intelligence. In the condition of the experiment in which the groups were formed from pupils of the same school class, there was no reliable difference between the homogeneous and heterogeneous groups on individual post-test scores. However, in the condition in which the groups were formed by pairing pupils of different classes, the heterogeneous groups produced significantly higher individual post-test scores than the homogeneous groups, but only among the girls. This sex difference in the results was not expected by the investigators and they gave no satisfactory explanation for it.

The study by Sawiris (1966) mentioned above, which examined the effects of two-member associate co-operative groups on pupil learning, also included a comparison of homogeneous and heterogeneous groups. There were no significant post-test score differences between the heterogeneous and the homogeneous groups or between either type of group and the condition in which pupils worked individually. However, the time taken to complete the learning task was greater for the heterogeneous groups than for either the homogeneous groups or the individual condition. Thus, learning from this associate co-operative task was less efficient when abilities within the group were heterogeneous. It is possible that this result was brought about in the heterogeneous groups by the higher ability pupil having his rate of performance slowed by the demands for assistance by the other low ability member of the group; while in the homogeneous groups, where ability levels were matched, there would be much less time spent by either member assisting the other.

Without further research information, the results of these two studies do not provide an answer to the question raised. Perhaps the question has been inadequate. Other questions may be more relevant. For example, with heterogeneous groups it can be asked whether or not there is a differential effect on the low and high ability pupils of the group, in the learning accomplished. For example, does the heterogeneous group benefit the low ability pupils within the group more than the high ability pupils? Relevant experimental investigations do not appear to be available.

Size of the Group

The characteristic of group size, or number of group members, has received little attention in any context relevant to this review. Although there appear to be no experimental investigations reported in the available literature, this group characteristic merits mention. Thelen (1949) propounded a principle that the most effective learning will result from the group that is of the smallest size possible and still has available among its members all the resources of skills and information that are necessary to the learning task. The greater the size above this optimum, the greater the duplication of resources between the members of the group, and the more redundant is the participation of at least some members of the group. Thelen says that in practice his principle would suggest for learning of language skills that a group of two might be optimum, whereas for creative-type tasks a group of eight might be optimum. No research evidence was given. In the classroom, however, there is a counteracting factor not considered by Thelen. The smaller the groups, the greater the number of groups in the classroom, with a class of fixed size. Now the larger the number of groups in the class, the less is the teacher's supervision time available to any one of them.

Pupil competition

The principal defining characteristic of competition is that pupils have opportunity to compare their levels of performance results in some way which give meaning to statements such as 'Pupil A performed better than pupil B on the learning task.' It will be seen that this criterion can be fulfilled by almost any marking or grading system which does not assign the same mark or grade to all pupils and which permits pupils' marks or grades to be public knowledge among the pupils. While competition may be unintentional in a school's procedure of marking and publishing grades, competition is undoubtedly intentional in such school practices as class places, honour lists, and prizes.

If pupil A receives information about the performance results of pupil B, this provides pupil A with a standard against which to evaluate his performance. In competition this relationship between pupils holds for all pairs of competing pupils. Moreover, the relationship is a symmetrical one for each pair. Competition can thus provide for each competing pupil a standard of comparison by which he may judge his level of performance (Festinger, 1954). Reflection suggests that the effects of competition on any given competitor will depend on the differences between the maximum possible level of performance of the competitor and actual performance levels of the other competitors. Performance of a competitor would probably not be facilitated by placing him in competition with other competitors whose performances are much below his maximum level. On the other hand it may well be facilitated by placing him with competitors who are at, or slightly above, his maximum performance level. Thus, the effect of competition on any competitor's performance is not independent of the performance levels of his fellow competitors.

Experimental investigations have been conducted which compare the performance achieved under a competitive condition and under what is usually described as a 'non-competitive' condition. Beginning with Triplett's (1898) study, which was the first experiment in social psychology, there has been a long succession of such studies, but very few directly relevant to school learning. Bergan (1967) compared rate of responding to a programmed text on psychology under a competitive condition in which subjects were paired and a non-competitive condition in which subjects worked alone. Results for the women undergraduate subjects working at the task for a single half-hour session, showed that the rate of performance was higher under the competitive condition. Unfortunately, this experiment and its predecessors do not tell us as much about the effects of competition as might appear. The non-competitive condition did not enable the subjects to compare their performance level with any performance standard. Thus, the difference in performance between the competitive and non-competitive conditions may be no more than a reflection of the fact that subjects work better when they are able to use *some* standard against which to evaluate their performance. It is possible that alternative non-competitive conditions in which, for example, a standard is set by the teacher, or the pupil commits himself to a performance aspiration level, may be more effective than competition. No comparisons such as these, in which the non-competitive as well as the competitive condition give opportunity for subjects to compare their performance with some standard, appear to have been made in relevant experimental studies.

Before discussing the next study, consideration will be given to some of the assumptions implicit in the hypothesis that a competitive condition will facilitate pupil performance. First, there is the assumption that the level of pupil performance under the non-competitive condition is less than the pupil's maximum level, otherwise no increase could result from the introduction of competition or any other condition. On the other hand, if under the non-competitive condition the level of performance is far below maximum, as for example would be the case if the task were intrinsically without interest to the pupil, a significant facilitating effect from competition is probable.

Second, it is assumed that the pupil regards the levels of performance of his competitors as comparable, in so far as they are neither too far above nor too far below his own level of performance (Festinger, 1954). As an extreme example, the performance of the young junior school pupil is not, in this sense, comparable with that of the secondary school pupil, and therefore competition between the secondary and junior school pupil would not be expected to take place. A consequence of this assumption is that, if the performance levels of pupils are not comparable, the outcomes of any attempted competition would be entirely predictable by the pupils. Such a state of affairs, in which the pupils had accurate foreknowledge of who would and who would not win, would be incompatible with pupil motivation to compete. Pupil performance levels are most likely to be comparable in a class homogeneous in abilities, as may be found in a large fully streamed school. In consequence, a homogeneous class would make competition likely, while a heterogeneous class would make it less likely. However, this does not hold for group competition as *groups* can be readily matched in ability irrespective of whether the class is heterogeneous or homogeneous.

Third, there is the assumption that pupils are motivated to try to perform better than their peers and that pupils are not motivated to keep their level of performance below that of their fellows. If a pupil agrees to let another win this assumption is then unwarranted. It is also unwarranted if pupils are indifferent to comparisons of their performance with that of their fellow pupils.

None of the three assumptions appears to have been given explicit consideration in experimental or controlled studies of competition, apart from a study by Atkinson and O'Connor (1963) which explicitly took account of the second and third assumptions. Grade six pupils of above average intelligence who had previously experienced only heterogeneous classes were assigned to less heterogeneous classes. Other pupils remained in the fully heterogeneous classes. Six months after entering the sixth-grade classes attainments in reading and arithmetic were assessed. Individual measures of pupil motivation to achieve and of pupil anxiety about failure had previously been obtained, a third of the pupils being highly motivated to achieve and relatively low in anxiety about failure, while another third relatively low in motivation to achieve and highly anxious about failure. In the less heterogeneous classes the former group made significantly greater gains in attainments than the latter group. In the fully heterogeneous classes there was no significant difference between the gains in attainments of the two groups. Atkinson and O'Connor attributed the higher achievement gain made by the group of high achievement-motivated pupils in the less heterogeneous classes to facilitation by competition. This interpretation is consistent with the second and third assumptions above, in that a class heterogeneous in abilities does not facilitate competition and that a more homogeneous class situation will facilitate competition, but only among those pupils whose motivation disposes them to compete.

Group Competition

The defining characteristics for competition can be modified by making the substitution 'group' for 'pupil'. A summation is made of performance results of the pupils in each group. There is thus one performance result level for each group and opportunity for pupils to compare the levels of the groups. Levels of individual pupils are not compared. This kind of competitive condition is usually referred to as 'group competition'. Coleman (1959) has claimed that greater use of such competition, particularly in the form of inter-school competition, would facilitate more effective learning among adolescent pupils.

The frequently quoted study of Hurlock (1927) compared the effects of group competition (between two class teams) with a control condition in which grade four and six pupils worked individually without any instructions to compete. Performance on the task of mechanical arithmetic was found to be higher under the group competitive condition. However, interpretation of the results is subject to the same difficulties as obtained in the previously cited experiment of Bergan. The results of Hurlock may do no more than support the hypothesis that performance was lower in the non-competition because, unlike the competitive condition, this condition did not provide any standard by which pupils could evaluate their performance. A further limitation of Hurlock's experiment is that the children's performance was measured only while the competitive condition was applied. There was no post-test to assess performance following removal of the competitive condition. Without such a post-measure there is no basis for inferring that learning has been influenced, rather than performance raised merely for the duration of the competitive condition. This limitation does not apply, however, to an experiment by Wilkes (1965) which compared the effects of group competition with a non-competitive condition on progress in learning a set of physical education skills (basketball). The subjects, who were male undergraduate students, received instruction under the experimental conditions for three sessions a week over a period of 3½ months. Scores on individual post-tests were higher under group competition than under the non-competitive condition for those subjects who were of low general ability at physical skills. There was no difference in level of learning between the competitive and non-competitive conditions for those subjects high in general ability at physical skills. It could be that these high ability pupils were already at their maximum level of performance under the non-competitive condition. This study suggests that at least for certain tasks and certain pupils, group competition can result in more efficient learning than is the case without competition.

A comparison of the effectiveness of the two types of competition, individual competition and group competition, has been made in several investigations. Farran (1968) compared the learning outcomes of simulation games conducted under individual competition and under group competition. There were two simulation games played over several sessions. One simulated consumer purchasing and the other simulated personal decisions about education, marriage, and other life concerns. The subjects were eighth-grade boys attending a residential school for remedial education. Knowledge which the individual subjects acquired from the games was assessed in post-tests. For both simulation games individual competition produced higher mean post-test scores than group competition. Unfortunately, post-tests were not given in two other investigations which report a comparison between individual and group competition. Performance was measured only while the competitive condition was applied and not following removal of competition. One investigation using children as subjects was reported by Craig (1967). Learning tasks in elementary genetics were given to seventh and eighth grade children under the associate co-operative condition. There was a comparison of individual and group competition over one session. No significant difference in performance was reported. In a study by Julian and Perry (1967) it was found that individual competition produced higher performance than group competition during a single session in which undergraduates did statistics exercises under the associate co-operative condition.

Results of investigations thus indicate that when tasks are conducted under the associate co-operative condition, higher performance can result from individual competition than group competition. When the learning task is conducted under the joint co-operative condition, however, as in the studies on undergraduates by Deutsch, (1949) and Hammond and Goldman (1961) individual competition is found not to be superior to group competition. Apparently the demands of individual competition tend to conflict with the demands of the co-operative interaction involved when a group result is required, as in the joint co-operative condition.

Conclusions

This review has examined and interpreted experimental evidence on the claim that co-operative interaction between pupils facilitates learning of pupils. A distinction has been made between those learning tasks (IC tasks) which can be performed either with or without co-operative interaction and those learning tasks (C tasks) which can be performed only by co-operative interaction and cannot be performed by a pupil working on his own. A number of investigations have compared the efficiency of learning IC tasks under a condition designed to encourage co-operative interaction, with the efficiency of learning the same tasks under a condition intended to exclude any co-operative interaction. Unfortunately these investigations have not monitored the interaction which took place in either condition and the results are thus open to a variety of interpretations. The learning of C tasks has been investigated in only a very limited number of studies which did indicate that the co-operative interaction of a C task can facilitate pupil learning.

Some attention was given to the question of whether or not variations in the characteristics of the co-operative group affect the learning of the pupils in the group. In several investigations, variation in the level of cohesiveness of co-operative groups did not affect pupil learning, except for a brief duration after initial formation of the groups.

Competition involves communication between pupils about the *results* of their task performances, not, as in co-operation, communication about the *means* by which the task is accomplished. In competition, pupils compare the results they have produced with those of other pupils. Such comparisons provide standards by which each pupil may evaluate his performance. A review and interpretation was made of the experimental evidence about the claim that competition between pupils facilitates pupil learning. One investigation showed the importance of the heterogeneity of ability levels of the competitors in determining whether or not effective competition will take place. It found that with homogeneity of abilities among the pupils, competition was likely to facilitate pupil learning. A close relationship between achievement motivation and motivation to compete was also found.

Results from several investigations suggest that while competition between individuals can result in more efficient learning than group competition, individual competition is not more effective when the learning task is conducted under the joint co-operative condition. The demands of this form of co-operative interaction thus impose a restraint on the operation of effective competition between individuals.

Decisions to increase or reduce competition or co-operation among school pupils may rest on factors other than efficiency of pupil performance. For example, it may be the educator's intention to provide pupils with the experience of working together or experience of competitive interaction. Experiences of interpersonal relationships and effects on interpersonal relationships, which result from co-operation and competition are topics beyond the scope of this review. Nevertheless, they are factors which provide grounds for increasing or reducing co-operation or competition among pupils, independently of whether or not co-operation or competition facilitates pupil performance.

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CHARACTERISTICS OF ESN SCHOOL LEAVERS SELECTED FOR INDUSTRIAL TRAINING

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THIS PAPER is concerned with a group of immature ESN school leavers specially selected for a course of work preparation at the Cliffdale Industrial Training Unit in Portsmouth. The characteristics which distinguish them from contemporaries going straight into employment are discussed, and show that the trainees differ in referral history, intellectual level and length of time in the special school. The selection criteria for the training, including educational attainment and personality considerations, are reviewed, and those areas which show most improvement are underlined. Figures are also presented to show the length of training given and the relative success of the job placements.

It is hoped that these findings will demonstrate the employability of even immature ESN school leavers, and illustrate the factors associated with employment difficulties and the selection of those ESN leavers most likely to benefit from a period of industrial training.

Introduction

The Cliffdale Industrial Training Unit, which has been in operation since January, 1967, is a purpose-built factory unit designed to give genuine experience to a section of the leavers from the Portsmouth LEA Secondary ESN School.

The concept and development of the Unit has been described elsewhere (Jerrold and Wright, 1967; Wright, 1971), as has the day-to-day running of the unit (Jerrold and Fox, 1971). In brief, the unit caters for those future leavers from the school who have found difficulty in obtaining or retaining employment, or those whose previous school record has suggested they will have such difficulty. They attend for four and a half days each week, carry out a wide range of jobs and orders for local factories, and are generally given experience in every aspect of industrial life. This experience is intended to be preparatory rather than vocational in orientation.

At the end of December, 1970, the unit completed four full years of operation (12 school terms), the last term being spent in the new purpose-built factory unit. It seemed an appropriate time, therefore, to give an overview of the way the unit has worked in practice during this time, the type of school leaver catered for, and the results of the training provided. A partial review was made previously after two years (Hall *et al.*, 1969) when 25 leavers had been involved with the unit. Now that these and almost as many others have passed through the unit into employment it would seem relevant to attempt a detailed description of these trainees, both to illustrate more clearly the unit's application and also to aid the selection for industrial training of future leavers.

The present study

There were 53 in the group selected over this four-year period for industrial training, of whom ten were girls. This shows that girls are relatively less numerous at the Training Unit than in the ESN school and in fact the 13 current trainees are all boys. Forty-nine of the 53 so far selected have come from the ESN secondary school, and

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this represents between 20 and 25 per cent of those eligible to leave the school during this four-year period. The remaining four trainees came from differently organised schools (one each from schools for maladjusted children, and physically handicapped; one from the lowest stream of a secondary modern school outside the city; the fourth, an atypical entry at age 21 years 9 months, from the Adult Training Centre). Numerically, then, the Industrial Training Unit caters for only a minority of what is already a very selected population.

The trainees will now be described in rather more detail, under three main headings, and compared with a control group:

1. their records prior to selection;
2. characteristics at the time of selection;
3. their progress and some results.

For a number of reasons there are fewer controls than trainee subjects, but to make the control group as comparable as possible within the conditions set, a smaller number was settled for.

1. *Records prior to selection*

By searching the School Psychological Service files for each of the trainees and each member of the control group, it was possible to describe and make comparisons within each of five areas.

(i) *Age at first referral.* It can be seen from Table 1 that the training group as a whole was referred on average some 18 months earlier than the special school children who were later able to go straight into employment. The two means here are significantly different, but perhaps of more relevance is the enormous range of referral ages shown, with considerable overlap between the two groups. Perhaps the major difference between the two groups on this variable is the number referred as Pre-school Children, rather higher in the trainee group.

Table 1: Age in months at first referral

	ITU Group	*Controls*	
Mean	85·5	103·6	p < ·01
Range	39–153	58–159	
SD	26·7	24·6	

(ii) A comparison of *referral sources* (see Table 2), however, does not show any special difference between the two groups, and in both cases the far greater number came from headteacher referrals, based on poor educational progress.

Table 2: Referral sources

	HT	*SMO*	*Consultant*	*Speech Therapist*
ITU	31	7	7	5
Controls	27	4	4	1

(iii) A corollary to the differential referral age seems to be the *length of time* the members of the two groups *spent in the special school* (Table 3).

Table 3: Length of time in special school, in terms

	ITU Group	*Controls*	
Mean	20·5	17·5	p < ·05
Range	5–31	8–30	
SD	6·9	5·3	

There is a significant difference between the means of the two groups for the length of time spent in the special school, which amounts in actual terms to an average of almost a year longer for those who eventually go to the Industrial Training Unit. Again, there was considerable overlap, but again this illustrated the fact that those who eventually will find difficulty in employment tend to be the ones experiencing difficulties earlier in their school career.

(iv) It was felt for a number of reasons that there might be a *social class difference* between these two groups, and an attempt was made to obtain figures on this from the files, too (Table 4).

Table 4: Social class categories (Hall–Jones classification)

	3+	*4*	*5A*	*5B*	*6*	*7*	*Unemployed*	*In Care*
ITU Group	3	2	3	8	2	3	4	1
Controls	–	–	2	6	4	3	–	3

Where possible the paternal occupation was rated on the Hall–Jones Scale of Occupational Prestige, and the numbers falling within each of the categories compared for the two groups.

(v) Table 5 gives a comparison of *intelligence levels*, where there is a rather more significant difference between the two groups. All the children who entered the training unit have been assessed on at least one individual test, and those going through the secondary special school almost invariably on two (Binet and WISC). For the most part these assessments were carried out prior to entry to the special school, and in only a few cases have been 'brought up to date' since that time. Within these limitations, however, there are some interesting differences to be seen. On all measures the ITU group scores were lower than the control group, and differences between the means for the Binet and full scale WISC scores are statistically significant. There is again considerable overlap between the two groups, particularly in the higher ability scores. On the other hand, on both the Binet and the WISC much greater numbers of the trainees have scores in the *lowest* category of both the tests, compared with the control group scores.

Table 5: Intelligence levels

		ITU Group	*Controls*	
Binet:	Mean	67·9	71·4	$p < \cdot 05$
	Range	52–88	62–88	
	SD	8·0	6·5	
WISC (Full Scale)	Mean	64·3	69·2	$p < \cdot 05$
	Range	47–80	56–84	
	SD	9·6	7·1	
(Verbal Scale)	Mean	67·5	70·2	
	Range	51–85	55–91	
(Performance Scale)	Mean	68·8	74·2	
	Range	44–90	48–96	

2. *Characteristics at the time of selection*

The mechanics of selection for the Industrial Training Unit have been described previously (e.g. Jerrold and Wright, 1967). There are as yet no rigid criteria for selection, but a description of the ability levels and personality characteristics of those who have been selected might serve to illustrate the thinking behind the choice.

The mean age for entry to the unit (16·1 years) coincides almost exactly with the special school-leaving age, but in the individual case there is some variation (Range 15·0–16·8 years, and the one atypical entry at 21·8 years). The incidence of those entering before they are 16 suggests a policy to start the work preparation in 'obvious' cases as early in the final year as there are vacancies.

The academic levels of those selected for training are given in Table 6 and are compared again with the control group.

Table 6: Attainment levels

	ITU Group	*Controls*	
Reading Ages (Schonell)			
Mean	7·9	8·9	$p < \cdot 05$
Range	5·0–14·0	5·5–14·4	
SD	2·3	2·4	
Arithmetic Ages (Staffordshire)			
Mean	7·8	8·6	
Range	5·9–9·5	5·9–10·3	
SD	2·9	3·4	

The trainees have a significantly lower mean Reading Age than the controls, though, as with the intelligence levels previously reported, there is a certain amount of overlap. The difference in the means (one year) is important because, *on average*, the control subjects have virtually achieved literacy (taken as a RA of 9½ years), whereas again on average, the trainees do not achieve this. Comparison of the distribution of the reading ages of the two groups shows that the overlap in the two sets of scores comes at the higher levels, the training group having many more subjects with *minimal* reading levels, and it is these who contributed most to the difference between the groups.

Scores on the arithmetic test are more symmetrically distributed with the control group mean significantly higher than the trainee group. This difference would seem to have less relevance to future prospects than on the reading tests, and underlines that *both* groups are very backward in number work. Thus, although it is possible to point to significant differences in attainment, there are a number of trainees who in fact have *better* attainment scores than contemporaries in the school who go straight into employment.

An attempt has therefore been made to point out *personality differences* which may have made as large a contribution to the selection.

this represents between 20 and 25 per cent of those eligible to leave the school during this four-year period. The remaining four trainees came from differently organised schools (one each from schools for maladjusted children, and physically handicapped; one from the lowest stream of a secondary modern school outside the city; the fourth, an atypical entry at age 21 years 9 months, from the Adult Training Centre). Numerically, then, the Industrial Training Unit caters for only a minority of what is already a very selected population.

The trainees will now be described in rather more detail, under three main headings, and compared with a control group:

1. their records prior to selection;
2. characteristics at the time of selection;
3. their progress and some results.

For a number of reasons there are fewer controls than trainee subjects, but to make the control group as comparable as possible within the conditions set, a smaller number was settled for.

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An attempt has therefore been made to point out *personality differences* which may have made as large a contribution to the selection.

It has not been possible to carry out personality assessment as such with those who have left the ITU and school, and such comments as will be made are both retrospective and subjective. However, with information from the School Psychological Service files and, mainly from the *school's report on each leaver* to the Youth Employment Officer, it has been possible to show certain differences in personality type between the trainees and their controls. Of the ITU group 39 of the 53 (73 per cent) were ascribed personality characteristics referring to their inability to cope with social situations, whereas of the control group only seven (19 per cent) were described in this way. This suggests that personality factors might be the chief determinants of Training Unit selection, and is an important finding since the trainees have not entirely shown up as a distinct group on the other measures (though mean scores *do* differ significantly).

An attempt was made to describe the social inadequacy and personality type more reliably by the administration of standardised tests to the current ITU population, and to some control group members currently in school and expecting to go straight into employment.

Two measures were used: the Manchester Scales of Social Adaptation, and the Junior Eysenck Personality Inventory (JEPI), results being obtained from ten of the current group. On the Manchester Scales, five subtests were looked at (Social perspective general; Socialisation of play; Freedom of movement; Self-help and Handling of money).

Because of the nature of the scoring on the scales, with the conversion of raw scores to percentiles, it is difficult to make comparisons between the two groups, since virtually all scores fell within the first ten per cent for this age level in both groups. A comparison of the raw scores, however, suggests that there *are* particular areas of deficit both in relation to the test norms and in comparison with those subjects still at school. The largest variation from the norms was in 'Social perspective general', sampling knowledge about the subject's age, address and general awareness of his situation; and also in 'Self Help', sampling the subject's ability to organize his own care in the home, in such matters as washing, dressing, getting up, etc., the most obvious feature here being a lack of independence from parental supervision and an absence of initiative. There is some evidence, however, that these are general characteristics of ESN leavers, and not necessarily confined to those requiring work preparation. The item showing the greatest deviation from the control group was 'Socialization of play/leisure', sampling the activities and social contact indulged in outside school, and the level of emancipation from the home. The ITU group more frequently reported not taking part in games, not belonging to adolescent organisations and not going out in the evenings (usually preferring to stay alone at home watching television). In a more detailed way, and in a different environment, these self-descriptions tend to mirror the generally poor socialisation of the ITU group, and this again illustrates something of the unit's scope for helping the trainees. It may well be that a similar assessment prior to entry to the Unit might both aid selection, and also suggest areas of deficit in the trainees' social competence for the training to centre around. (A report by Burden, 1969, gives more detailed information about the performance of ESN leavers on these tests.)

3. *The progress made and some results*

(i) The average time the trainee may expect to *spend in work preparation* is 2·4 terms (range $\frac{1}{2}$–$6\frac{1}{2}$ terms), these figures being based on the 40 who have so far completed their Industrial Training to the extent of gaining their first employment. The distribution tends to cluster around this average time, and suggests that at least six months' preparation in addition to the previous special schooling is required before employment prospects are improved, and for some the time is much greater. An attempt was made to correlate the length of time spent by each trainee at the ITU with some of the earlier variables (e.g. RA or time in Special School) but there was no apparent relationship here. The whole range of factors, including personality, seems to determine this, though it is conceivable that those with some form of 'secondary' handicap (e.g. extreme disturbance or maladjustment; physical handicap or spasticity) may require longer.

The group currently in the Unit do not vary from this pattern, four having had four terms up to December 1970, two two terms, and seven one term.

(ii) It had been hoped to measure the *main areas of progress* made by those who have successfully gone into employment. Continuous assessment on a regular basis has recently been reintroduced at the unit, but had not previously been maintained for long enough to trace any changes exactly. The supervisor's observations, however, coupled with the employers' requests, do suggest certain areas where improvement is sought and made. The ranking order of areas of improvement with Indus.rial Training was as follows:

1. Timekeeping;
2. Attitude to and responsibility in work;
3. Self-discipline while at work;
4. Relationship with fellow trainees;
5. Work standard;
6. Safety awareness.

It is hoped to evaluate this aspect of the Unit's work more closely and systematically when the present incentive and observation scheme has worked for a protracted period.

(iii) The employment situation of the 40 leavers as at December 1970 is shown in Table 7.

Table 7: Employment records

	ITU Group (n = 40)	*Controls* (n = 23)
Still in first job	20 (50%)	10 (43%)
Still in subsequent job	12 (30%)	11 (48%)
Unemployed	4 (10%)	2 (9%)
Placed elsewhere	4 (10%)	–

The figures are shown alongside those for the 23 control subjects whose position at that time it was possible to trace. It can be seen that the trainee group, although characterized by lower ability, lower attainments and lower social competence is coping on the whole with employment at least as well as a group from the ESN Secondary School not deemed to require work preparation. In fact, the figures for the control group may even be flattering, since the Youth Employment Office do not deal with the leavers after the age of 18, and in any case not all leavers obtain jobs through the YEO. The number ostensibly in their first jobs may in fact, therefore, be smaller. In the case of the trainee group though the position was known exactly, because of the personal interest taken in each employment.

In addition to these figures it must be pointed out that eight of these 'first job' subjects have been so placed for more than two years so far, and five others for over a year. This stability of employment compares well with figures from other areas: the National Youth Employment Council publication *At Odds* shows for 1968 that in the 16+ age group only 36 per cent of their subjects are in their first or immediately subsequent jobs, and 61·7 per cent have had six or more jobs (and this study of socially unsettled youngsters did *not* include the educationally subnormal). The employment records of all the ITU group also compare very favourably with those figures and with the findings of Durojaiye (1970) who compared ESN and non-ESN school-leavers.

From his experience with the employment records of severely subnormal adults, Clarke (1971) has indicated that to use 'number of jobs' as a criterion may in fact give too optimistic an impression of the situation, since, it is postulated, ESN employees may be too anxious about their careers to risk changing from a job, however uncongenial, because of the risk of not obtaining a further position, or one which is any better. Conversely, those school-leavers who have had several jobs may, in fact, be improving their situation and be better off than the ESN leaver stuck with his first position. On the other hand, the specific type of ESN leavers with which this study is concerned, were known in pre-unit years to have great difficulty both in obtaining and retaining a job of any sort; the record of unemployment of the trainees since the unit was opened, therefore, does represent a considerably rosier picture.

The remaining figures on Table 7 refer to the four trainees who are currently unemployed (though three of them started jobs on leaving the unit) and the four who are placed elsewhere. One is in the adult training centre (direct from the unit after 6½ terms), one is in a severe subnormality hospital following three terms in the unit and four days of employment, one is in a surgical hospital on a long-stay basis, and the fourth emigrated to Australia.

From this it seems that there may always be a very small proportion of trainees whom it may prove impossible ever to prepare for an effective employment, and these are certainly the most handicapped, both academically and socially.

Conclusions

A specific group of immature ESN leavers selected for Industrial Training has been described in some detail in terms of prior characteristics, selection considerations and post-training success. The objectives of this description and the comparison with a control group of ESN leavers going straight into employment are five-fold:

1. To demonstrate the *real* employment prospects of the most handicapped ESN leavers, given a period of suitable work preparation, and to point out the relevance to a wider group of school leavers, considering these results with a group presenting a range of special difficulties.
2. To show those characteristics of school-leavers most likely to predict problems with future employment, notably that considerations of personality and social adaptations seem to be as important as ability levels.
3. To aid the future selection of those ESN and other school-leavers most likely to need or to benefit from a period of work preparation.
4. To provide data on the actual functioning and success of an ITU, to show the length of stay generally required, and the areas where improvement may be looked for.
5. To encourage similar work in other Education Authorities.

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DIP.A.D. STUDENTS AND THEIR FOUNDATION COURSES

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ALMOST ALL ART and design students attend a preliminary Foundation course before commencing their degree-level Diploma in Art and Design studies. A group of 170 Dip.A.D. students were given a questionnaire designed to elicit information regarding their Foundation course experience, their attitudes to Foundation studies and the degree of satisfaction felt for their Dip.A.D. course. There was a general preference for smaller Foundation groups, longer Foundation courses and increased deferment of the choice of a Dip.A.D. course. The diagnostic methods employed by Foundation course staff to guide Dip.A.D. placings varied considerably; in a substantial proportion of cases no guidance had been given. The advisory techniques used appear to have had no effect on the student's subsequent satisfaction with his/her Dip.A.D. course.

Purpose of Study

To examine the Foundation course experience of Dip.A.D. students at a provincial college and to relate it to the degree of satisfaction felt on their Diploma course.

General background

The contemporary conception of a 'Foundation' course as a prelude to higher art studies is based in principle on the curriculum of the Bauhaus design school, founded in Weimar by Walter Gropius in 1919 and closed by the Nazis in 1933. Gropius (1935) and Bayer *et al.* (1952) clearly define the preparatory and diagnostic role of the 'Vorlehre' (Preliminary Course). Similar ideas did not take root in the UK until the early fifties, variously subsumed under the heading of 'Basic Design', 'Basic Studies' and later 'Foundation Studies'. Pasmore *et al.* (1959) provide an indication of the types of practice then implied by the terms. Sausmarez (1964) gives a more recent interpretation of Foundation principles. Commentaries on art education, for example Macdonald (1970) and Field (1970), rarely deal with the problems of Foundation studies in depth, and some, for example Hornsey (1969), are written from a partisan point of view. An examination of the available literature revealed no formal research of the specific problems considered in this study, although certain material proved to be relevant. For example, Iliffe (1969) describes the vital diagnostic function of the Foundation Year at Keele University during which a high proportion of students changed their chosen areas of study.

Recent history

The present structure of higher art education dates from January 1959 when the National Advisory Council on Art Education (NACAE or Coldstream Council) was appointed by the Minister of Education 'to advise him on all aspects of art education in establishments of further education' (NACAE, 1960). It recommended the winding up of the four-year National Diploma in Design (NDD) in favour of a three-year degree-equivalent Diploma in Art and Design (Dip.A.D.) to be preceded normally by a 'pre-diploma course' lasting 'at least one academic year' (NACAE, 1960). The NACAE went on to recommend that a second, independent organisation be set up to administer the Dip.A.D., and this led to the appointment of the National Council for Diplomas in Art and Design (NCDAD or Summerson Council) in May 1961. The combined literature of both Councils from 1960 to the present provides a detailed account of the operation of the Dip.A.D.

An addendum to NACAE 1960, published in August 1965, amended the term 'pre-diploma course' to 'foundation course', in order to eradicate the apparently mistaken inference that a pre-diploma course had 'no other purpose than to prepare students for admission to a Dip.A.D. course'. This ambiguity of the nexus between Foundation and Diploma courses is again treated in NACAE 1970 which recommended that 'the large disparity of numbers' between Foundation and Diploma courses be resolved through 'some means of central control'. The statistical table used to support this contention (NACAE 1970, p. 62, Table 6) does not appear to take account of the large proportion of students who spend two years on Foundation studies (see following report), many of whom apply for Diploma courses in their first year without success and swell the total number of applicants to a misleading figure. The Secretary of State's acknowledgement (DES circular No. 7/71) of NACAE 1970 shelves immediate action on the Foundation course problem pending 'a further period of consideration and discussion'.

Procedure

A sixteen-item questionnaire was composed to elicit information concerning the subject's experience of and attitude to Foundation studies and his degree of satisfaction with his Diploma course. The questionnaire was administered to 170 students comprising all three years of two Dip.A.D. courses (Fine Art 1 and 2, and Graphic Design) at a two-area provincial college. [In the nomenclature of the NACAE and NCDAD Fine Art 1 (Painting) and 2 (Sculpture) are regarded as one 'area'.] Using NCDAD documents as a base for calculation, the combined average sizes of a Fine Art 1 and 2 course and a Graphic Design course is 154 students. The average number of courses per centre is 2·5 (September 1970). The investigated group can, therefore, be regarded as close to the norm for Dip.A.D. centres in respect of student numbers and the number of courses run.

Of the 170 subjects, all but one had had some kind of Foundation course experience gathered at 69 separate Foundation courses in London, the provinces and Wales. The exception came to a Dip.A.D. course from a College of Education. There was a 91·8 per cent return of completed questionnaires.

Results

Over half (56 per cent) of the group spent three terms on a Foundation course, 39 per cent spent six terms and the remainder of 5 per cent spent periods of up to nine terms. Classifying their course by size, the largest single category (30 per cent) consisted of between 40 and 60 students; 10 per cent of the courses were composed of 20 students or less, and 9 per cent exceeded 80 students. The most common time for deciding upon a Dip.A.D. specialist area was the second term of the Foundation course, but there was wide variation on this point, with as many as 22 per cent deciding before beginning Foundation studies, and 3 per cent leaving the decision until after the completion of their Foundation course (see Tables 1A, 2A and 3A). For those who

Table 1: Number of terms spent on Foundation studies

	3	4	5	6	OTHERS
(A) Actual	56%			39%	5%
(B) Recommended	28%	7%	8%	45%	12%

Table 2: Size of Foundation course

	LESS THAN 20	20–40	40–60	60–80	80 +	OTHERS
(A) Actual size	10%	28%	30%	22%	9%	1%
(B) Recommended size	22%	42%	20%	4%	3%	9%

Table 3: Term in which Diploma area was decided

	BEFORE FOUNDATION	1	2	3	4	5	6	AFTER FOUNDATION	OTHERS
(A) Actual term	22%	9%	28%	19%	8%	5%	3%	3%	3%
(B) Recommended term	1%	3%	12%	30%	17%	8%	2%	8%	19%

decided their Dip.A.D. area during Foundation studies the average period of decision was 2·7 terms after the commencement of Foundation studies. For 8 per cent of the total group the choice of area was clinched by the offer of a place at a Dip.A.D. college.

Roughly half (49 per cent) of the group classified their Foundation course as 'balanced' with regard to the variety of study area or areas offered on the course, whilst 48 per cent described their's as 'fairly biased' (35 per cent) or 'heavily biased' (13 per cent). The most common areas of a single subject bias were drawing (10 per cent), painting (6 per cent) and sculpture (8 per cent), although 26 per cent of the subjects described their course as having a multiple bias towards, in most cases, two or three areas.

Over half of the group (51 per cent) claimed that they had received little or no guidance in the choice of a Dip.A.D. area. The most common form of advice came from an appraisal of work (45 per cent) (see Table 4). Only 10 per cent of the group had been offered anything the student classified as an information service and, from the evidence it would appear that none of the 69 Foundation courses used any specific diagnostic tests.

For most of the group (55 per cent) their first priority before joining a Dip.A.D. course was to get into a particular Diploma area (see Table 5). Twenty-one per cent intensified this choice to a particular area at a specific college. A small number (6 per cent) wanted to enter a specific college with the choice of subject area taking second place and 17 per cent were prepared to accept 'any suitable course'. Although there is a general correspondence between their priorities before joining the Diploma course and the terms upon which they actually entered it, a new group (8 per cent) admitted that on entry their present course represented 'any course available' regardless of location and subject.

When asked to state their personal opinions regarding the size and constitution of Foundation courses there was a significant preference for smaller groups, longer courses and a longer deferment of the choice of a Diploma course. These shifts can be seen by comparing Tables 1A, 2A and 3A with 1B, 2B and 3B. Although 22 per cent had decided their Diploma study area before beginning Foundation studies only one per cent recommended this practice. Conversely, the proportion recommending that the decision be taken after completion of the Foundation course was more than double that which had, in fact, delayed the decision that long.

Table 4: Diagnostic methods experienced by Foundation students

(a) appraisal of work	45%
(b) interview	8%
(c) information service	3%
(d) diagnostic tests	0%
(e) multiple	19%
(f) other	1%
(g) none	22%
(h) no response	2%

Table 5: Correspondence between priorities before joining Dip.A.D. course and actual priorities represented by course

	FIRST PRIORITY BEFORE JOINING DIP.A.D. COURSE	ACTUAL PRIORITY REPRESENTED BY COURSE
(a) a particular Diploma study area	55%	46%
(b) a particular college	6%	6%
(c) a specific course at a specific college	21%	17%
(d) any suitable course	17%	13%
(e) any course available	0%	8%
(f) no response	1%	10%

When asked to state what they felt to be the most important aspects of a Foundation course 54 per cent nominated 'staff' as their first priority, whilst the remainder distributed their choice over 'students' (17 per cent), 'facilities and space' (18 per cent), 'location' (1 per cent) and 'other' (10 per cent).

In answer to the question 'Do you regret being on your present course?' 70 per cent answered 'No', 14 per cent 'Yes' and 16 per cent were uncertain. The group (30 per cent) of dissatisfied and uncertain subjects was distributed evenly throughout both departments and all three years. There was, however, a majority of 'uncertain' responses from the first year of the courses as against a majority of definitely regretful responses in the third year. Given the list of options in Table 6 just over half of the total group (54 per cent) stated from preference to remain on their present course. The second biggest category (19 per cent) would have preferred 'the same Diploma area at another college'. Ten per cent would have preferred to be 'out of art education altogether', presumably because they could envisage no preferable alternative combination of area, course and college.

The replies of the 'dissatisfied' and 'uncertain' students (hereafter referred to as 'discontented') were extracted from those of the total group and analysed separately. Their responses to the questions showed little or no deviation from the pattern of responses of the whole group under investigation. In fact, they tended to have had on average more guidance than the total group, only 45 per cent claiming little or no guidance as against 51 per cent of the total group. However, only 41 per cent of the 'discontented' subjects rated their Foundation course as 'balanced' compared with the proportion of 49 per cent of the total group. When faced with the list of options in Table 6 the 'discontented' group showed the most significant proportionate shift towards 'a different Diploma area at another college' (15 per cent as against 6 per cent in the whole group), followed by 'out of art education altogether' (19 per cent as against 10 per cent) and 'in the same Diploma area at another college' (30 per cent as against 19 per cent).

Interpretation

The results of the inquiry should provide a fairly reliable picture of the Foundation course experience of Dip.A.D. students at a typical provincial college. Although the results will inevitably reflect to a certain degree the particular Dip.A.D. courses involved there is no obvious reason why a sample produced by a randomising procedure would yield a substantially truer picture of Foundation courses in general than that of the 69 courses represented by the subjects of this survey.

The survey reveals a clear preference for longer Foundation courses, smaller groups and a deferment of decision regarding Diploma study area. It can reasonably be assumed that those students who entered Foundation studies with a firm decision regarding their future Diploma area came to regard this as a premature choice.

Considering the recurrent call for self-orientated art study, and the frequent challenges to the staff/student dichotomy in art colleges the clear emphasis on staffing as a priority on the Foundation course is rather surprising. One striking finding of the survey is the relatively small amounts of guidance the subjects claim to have had in the choice of a Diploma area. This may suggest that Foundation courses are not unduly concerned with the finding of compatible specialisations for their students. The fact that the survey reveals no clear correlation between Foundation course experience and satisfaction with a Diploma course does not necessarily prove the converse.

Table 6: Satisfaction with course

WOULD YOU PREFER TO BE	TOTAL GROUP	'DISCONTENTED' GROUP
(a) on your present course	54%	17%
(b) in the same Diploma area at another college	19%	30%
(c) in a different Diploma area at this college	3%	6%
(d) in a different Diploma area at another college	6%	15%
(e) out of Art Education altogether	10%	19%
(f) other	8%	13%

that Foundation courses cannot play a useful diagnostic role. Discontent can be rooted in numerous factors not considered here, including individual psychology. It would appear that the diagnostic guidance given to students on Foundation courses at present is both inadequate and in some cases ineffective in that it does not appear to help in finding suitable Dip.A.D. courses. In fact, the survey suggests that it might be having, in some cases, a detrimental effect.

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COUNSELLING OF RETARDED READERS BY NON-PROFESSIONALS

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THIS STUDY is an extension of a previous investigation into the individual counselling of retarded readers (Lawrence, 1971). It was planned to test the hypothesis that it would be possible for non-professional personnel to achieve the same results as those obtained previously by a trained educational psychologist. Before embarking on this study, a pilot experiment was carried out in two schools. The results of this justified the setting up of the experiment proper. Four village schools were then selected and two matched groups of retarded readers obtained within each school. One group received counselling while the other group served as the control. The experiment lasted for two terms, at the end of which all counselled groups showed a rise in reading attainment.

Introduction

Despite the tremendous amount of research into the causes and treatment of reading failure, teachers are still unsure as to the best approach to the problem of helping the retarded reader.

In the previous study (Lawrence, 1971), the author suggested that an effective approach with some children could be an attempt to boost the morale of the retarded reader through a programme of individual personal counselling.

Bradshaw (1953) stated that 'At a time when we all pay lip service to the emotional concomitants of backwardness, it seems odd that all our efforts should so often take the form of a direct attack on the presenting symptom'. Indeed, remedial education has continued to concentrate on the cognitive aspects; for example, improving perceptual abilities and selecting appropriate reading schemes, despite the lack of authoritative evidence that this is the most effective approach.

Delayed maturation factor

It is suggested here that in many cases of reading retardation, the child's emotional state is his most outstanding handicap to further progress. In all probability he did at one time show perceptual problems, e.g. difficulty in visual or auditory discrimination, when first introduced to reading in the infant department. As he progressed through to the junior school, however, these perceptual disabilities disappeared through a process of maturation. In the meantime, however, the child had become discouraged and begun to show secondary emotional dissatisfaction. In other words his perceptual disabilities matured but his emotional conflicts remained. He is then left with a poor self image and lack of confidence in his ability to make progress in reading.

Through counselling he is able to express these feelings gaining support and understanding. In addition he begins to improve his image of himself and so rekindles his lost feeling of confidence.

Acknowledgements

I am greatly indebted to the children who served as subjects in these experiments, but who must of course remain anonymous. Without their co-operation the investigation would not have been possible.

Thanks are also due to Messrs. J. Dempsey, J. Pearce, J. Burgess, G. Holder, P. Townsend, and T. Hook, the head teachers who so readily agreed to help in the investigation and who co-operated fully throughout.

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Pilot study

Before carring out an investigation into the use of non-professionals as counsellors, it was considered advisable to carry out a pilot study for the following reasons. One could not morally justify treating retarded readers with 'untried' lay-counsellors in preference to traditional methods merely on hypothesis. Accordingly, two schools were selected where the children were already receiving skilled remedial help: counselling was then 'an extra' and not an alternative. In each of these schools it was found possible to match seven children with a control group. A different counsellor was used in each school and selected by the head teacher on the basis that she was sympathetic, intelligent and interested in children.

Both counsellors met the psychologist on three successive occasions before the experiment and again on three occasions during the experiment. The children were seen by the counsellor once a week for two terms, at the end of which time the counselling groups showed a rise in reading attainment, the results being statistically significant in one school only.

With the experience gained by the pilot study, the setting up of the main experiment was felt to be justified.

Aim of experiment

To investigate the effects of an individual personal counselling programme carried out by non-professionals on primary school children retarded in reading.

Design of experiment

Four schools were selected on the basis of interest in the project shown by the head teachers and staff in each school. Each school submitted a list of children considered to be retarded in reading and the following tests were administered: the Sleight Non-verbal intelligence test; Porter and Cattell Children's Personality Questionnaire (the CPQ was also given to a random sample of 30 good readers and compared with 30 poor readers); Schonell Word Recognition. From this information it was found possible to match six children in each school with a control group in the same school. They were matched on sex, mental age, chronological age, and reading age.

The head teacher of each school contacted a woman in the area whom he considered to be a suitable person for the experiment, and a preliminary meeting was arranged at which the psychologist approved the selection.

The method of counselling was explained to the counsellors and again suitable background reading was suggested.

Once again the system of counselling was identical to that used in Part 1 of the experiment and each counsellor was met three times during the programme which extended over two terms.

A typical interview

Counsellor	'Hello, James. It is nice to see you again. I do enjoy our chats together.'
Boy	'Hello, Mr. Lawrence.'
Counsellor	'Anything important happened to you since we last met?'
Boy	'Yes! Lots! I went to the Fair. Oh! And my stupid sister hit our baby with the brush and I got the blame as usual.'
Counsellor	'Oh dear! That must have been awful for you.'
Boy	'I always get blamed for everything in our house.'
Counsellor	'That doesn't sound fair to me.'
Boy	'It isn't fair. My mother says I am the naughtiest child, but I am not' (Heatedly).
Counsellor	'I expect it makes you feel angry.'
Boy	'Yes! It does. My mother wishes I was a girl, I think' (Sadly).
Counsellor	'I bet she is glad she has you around when those boys next door start being a nuisance' (Had previously reported chasing them from his garden).
Boy	'Oh! Yes!' (Brightening up). 'They walked all over our flower bed. But they soon ran when I came out!'
Counsellor	'A good job you were there. No telling what damage they might have done.'
Boy	'My sister can't count properly, you know! She never brings the proper change from the shop.'

Counsellor 'Your mother is lucky to have you to be able to shop for the important things, seeing as you can count well.'

Boy 'Yes! I never bring the wrong change. Hey! Have you ever been to Switzerland?'

Counsellor 'No. Why? It sounds interesting.'

Boy 'I'd like to go 'cos they have lots of mountains there. I saw it on TV and I bet I could climb those mountains easy. And all that lovely snow.'

Counsellor 'I agree with you. It sounds lovely. And I am sure you are right saying you could climb the mountains. Perhaps you will go there for a holiday one day.'

Boy 'Yes. I bet my Dad would take me.'

Results

Table 1: Reading ages before and after treatment together with gains

	COUNSELLED			CONTROL		
	Before	*After*	*Gains*	*Before*	*After*	*Gains*
School M	8·1	8·7	0·3	8·4	8·8	0·1
	7·3	8·8	1·2	6·7	6·6	−0·4
	6·7	7·1	0·1	6·3	6·5	−0·1
	7·1	7·7	0·3	6·6	7·1	0·2
	8·1	8·8	0·4	7·7	7·9	−0·1
	5·5	6·2	0·4	5·5	5·8	0
x̄ =	7·1	8·0	0·45	6·9	7·1	−0·5
School N	6·6	8·0	1·1	5·2	6·0	0·5
	6·3	7·1	0·5	6·5	6·8	0
	8·3	9·3	0·7	6·6	7·8	0·9
	6·3	7·7	1·1	8·4	9·9	1·2
	8·5	11·0	2·2	6·6	7·2	0·3
	7·4	9·2	1·5	7·9	8·5	0·3
x̄ =	7·2	8·7	1·18	6·9	7·6	0·46
School P	5·3	6·2	0·6	7·6	7·7	−0·2
	5·5	6·4	0·6	5·9	6·2	0
	7·3	8·0	0·4	6·2	6·6	0·1
	5·1	6·8	1·4	5·2	5·4	−0·1
	6·5	7·4	0·6	5·0	5·4	0·1
	5·1	5·7	0·3	5·0	5·2	−0·1
x̄ =	5·8	6·7	0·65	5·8	6·1	−·03
School Y	6·3	6·9	0·2	6·6	8·0	1·0
	6·6	6·9	−0·1	6·6	6·6	−0·4
	8·6	9·6	0·6	8·3	8·9	0·2
	8·0	9·6	1·2	8·3	8·9	0·2
	7·9	9·3	1·0	8·0	8·3	−0·1
	8·0	8·0	−0·4	8·0	8·3	−0·1
x̄ =	7·5	8·4	0·4	7·6	8·1	0·13

NB: A rise is not necessarily a gain. The 'Gain' columns allow for the fact that the children were older at the end of the experiment.

Discussion of results

1. The original hypothesis was confirme Three groups showed statistically significa rises in reading attainment at the end of th counselling.

2. Improvements in general adjustment an attitudes were subjectively reported by the teachers.

3. Judging from the individual summar records, there is more evidence for the view th retarded readers tend to have unsatisfied emotional needs associated with the self-image, bu without showing overt symptoms of emotion maladjustment. These unsatisfied needs varie in their expression with each child, but all had th underlying themes of imagined rejection, lack self confidence, feelings of social isolation, an worries over poor school work.

4. There was a highly significant differen between poor and good readers on the 'O Factor of the CPQ[1]. There was no significan *correlation*, however, between reading attainmen generally and the 'O' factor. This could b interpreted as meaning that retarded readers d not necessarily become steadily more guilty an troubled as they become more retarded. The chil retarded by one year could be just as trouble as the child retarded by four years or more.

Furthermore, as the child gets older it i possible that he would find satisfactions in othe school subjects unconnected with reading, e.g metalwork, games. In this way it is likely h would begin to improve his self image to som extent.

5. It is interesting that out of seven counsellor in all (including those in Part 1 and the pilo study), the five who achieved significant rise in reading attainment all scored highly on th 'H' Factor on the 16 PF Test which Cattell (1959 defines as a course trait of socially bold, uninhibited, spontaneous behaviour. This person i able to face wear and tear in dealing with peopl and gruelling emotional situations without fatigue These people are abundant in emotional response

In contrast, our retarded readers were described by their teachers as lacking spontaneity and they generally scored high on the 'O' Factor ich Cattell also defines as a measure of self-age.

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[1] Cattell regards a high score on this test as indication of troubled, guilt-prone behaviour associated with a poor self image.

onclusion

It should be strongly emphasized that although would seem to be possible in certain cases to prove children's reading ages through a ogramme of individual counselling, the selec- on of those children likely to benefit from this nd of programme should be made only after a ll diagnosis into each child's difficulties.

Counselling alone is not likely to help those hildren with specific perceptual difficulties—for stance, where they do not possess the basic ills necessary for reading. A proper initial iagnosis would eliminate from the counselling rogramme those who may be in need of a ifferent kind of help.

ppendix

able A: Comparing significance of individual differences in gains in reading attainment between Control and Counselled groups in each school

(Mann-Whitney 'U' Test)

School	'*U*'	*Significance level*
M	1	·002
N	6	·032
P	5	·021
Y	13	·2

Table B: Showing means and S.D.s for C.A., I.Q., R.A. as matched at the beginning of the experiment

			C.A.	M.A.	R.A.
School M	*Counselled*	x̄	9·4	8·7	7·1
		SD	1·9	1·32	1·19
		N=6			
	Control	x̄	9·4	8·5	6·9
		SD	2·06	1·03	2·31
		N=6			
School N	*Counselled*	x̄	9·0	8·3	7·1
		SD	1·86	1·42	2·36
		N=6			
	Control	x̄	9·1	8·1	6·8
		SD	1·46	1·78	2·14
		N=6			
School P	*Counselled*	x̄	7·8	6·5	5·8
		SD	1·72	2·04	2·17
		N=6			
	Control	x̄	7·9	6·5	5·8
		SD	1·43	2·16	1·92
		N=6			
School Y	*Counselled*	x̄	9·6	10·2	7·5
		SD	1·84	1·54	1·82
		N=6			
	Control	x̄	9·4	10·0	7·6
		SD	1·26	1·76	1·53
		N=6			

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SOCIAL SCIENCE AND TEACHING PERFORMANCE

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THE INTRODUCTION of sociology and social work as main subjects in teacher education has raised a controversy as to whether they are as sound a preparation for teaching as the traditional classroom-based main subjects.

A survey of teaching practice results at Edge Hill College of Education in the years 1966–70 displays that sociology students perform as well as other students whilst social work students gain significantly more high grades. Since entry qualifications, age, sex, intelligence and personality factors do not differentiate these students an explanation is suggested in terms of the course. This may affect recruitment, the student's classroom performance and his ability to utilize the social situations of teaching practice.

A major innovation in British teacher education in the last decade has been the introduction of sociology and social work as main academic subjects in the Colleges of Education. By 1968–69 some 26 per cent of colleges were running main courses in sociology and several courses in social work, all of which were well subscribed. Traditionally, main subjects in teacher education have been classroom subjects, and have been viewed as having a twin utility, for the personal education of the student, and for his professional preparation for the classroom. The introduction of what are virtually non-teaching subjects has aroused some controversy because of their apparent lack of direct relevance to professional performance. At the college and school level the issue has centred around whether such courses are as sound a preparation for teaching, or fulfil the needs of the schools as traditional subjects are seen to do. For sociology Craft (1963) has argued that it offers insights into the functioning of modern society, and facilities self-awareness, both of which he felt can make some contribution to professional skill. Musgrave (1965) has written that its justification must rest on the claim that it is as effective in educating the teacher as any other, whilst Taylor (1966) has claimed that it should produce teachers with a 'rational intellect' which has for long been valued by 'superior' schools, and the lack of which has kept teacher training in poor esteem. For social work the extension of teacher's role with an emphasis on parent-teacher and social worker-teacher contact has been viewed as meeting very real needs of children and schools, for example, see Craft, Raynor and Cohen (1967).

In spite of the protagonists, at the grass roots level of college and school, and in regard to teaching practice, the subjects meet with some hostility. This centres on what the student is equipped to teach in terms of subjects when compared with students reading traditional subjects and consequently whether or not the social science student is at a disadvantage in terms of teaching. This controversy has been untempered by fact, and the present study is a tentative beginning to supply some data. If the main subject that a student teacher reads has an effect on his classroom performance (and this itself has not been substantiated), then this should be revealed by analysis of teaching performance. The only generally available assessment is teaching practice grades. Whilst these themselves can be seen to be problematic, as Robertson (1957) and Tarpey (1963) amongst others have shown, they remain as careful an assessment as is made. In the case at hand, the students were assessed by two college tutors, only one of whom could be from the student's discipline, in consultation with class and head teachers and moderated by an external examiner. The actual school situation can be seen as a factor influencing assessment, and there is evidence to show selective placement of social work students. However, this was also the practice for other groups of students, for example, physical education, science, languages, and in any case was not consistently seen to be to the advantage of the student.

The study

The 1,237 final teaching practice grades given to students at Edge Hill College of Education between 1966 and 1970 were analysed in order to reveal any differences in performance between students reading sociology, social work and traditional teacher education main subjects. During this period the assessment was changed from an eleven-point to a six-point scale. The earlier assessments have been transcribed into the latter scale, and for purposes of computation given numerical value.

To further the investigation similar detailed analysis was made of available information concerning the students who entered the college in 1967 and who were assessed in 1970. For nearly all students this consisted of AH5 Intelligence Test Scores, Mill Hill Vocabulary Test Scores, Eysenck's Personality Inventory Scale 'B' scores, 'A' level GCE passes, age and sex, and for most students the selection interview grade given by the college staff. In each case means, standard deviations and correlations were computed.

Results

The distribution of final teaching practice grades for students reading sociology is very similar to that of students reading traditional subject (see Table 1). Overall there is a tendency for them to be over-represented in the middle range of grades (C+ and C, 61% c/f 58%) and under represented in the higher (A and B, 32% c/f 35%). These differences are not significant, nor does year by year analysis reveal any significant or consistent differences. In two of the five years sociology students gained a slightly higher percentage of lower grades than other students, and in a further two a larger percentage of the higher.

Social work students display a significantly different distribution of grades compared with students reading traditional subjects. They were more likely to be assessed in the higher range (A and B, 47% c/f 35%) less likely to be in the middle range (C+ and C, 46% c/f 58%), and comparable in the lower range (D and E, 6% c/f 6%). This pattern is true for three of the four years.

Analysis of the student input variables revealed but one significant difference between the groups: social work students were more likely to be given higher grades at the selection interview than were traditional subject students ($P=<0\cdot05$)[1] Analysis of the input factors of all students displayed that only interview grade and 'A' level GCE passes were significantly related to teaching practice grade.[1]

Table 1: Distribution of final teaching practice grades for students reading sociology and traditional main subjects 1966–70.

	A	*B*	*C+*	*C*	*D*	*E*	*n*	*Mean*	*SD*
Sociology	8	50	61	49	8	3	179	3·9553	1·0321
Traditional	43	281	290	268	46	13	941	3·9659	1·0421

Table 2: Distribution of final teaching practice grades for students reading social work and traditional subjects 1967*–1970.

	A	*B*	*C+*	*C*	*D*	*E*	*n*	*Mean*	*SD*
Social work	10	48	30	27	7	1	123	4·1951	1·0988
Traditional	41	241	227	243	36	10	789	3·9835	1·0523

Value of t=2·0000 Probability=<0·05

*The first year in which social work students graduated.

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[1] Figures have not been reproduced but may be obtained from the writer.

Discussion

The findings contain no evidence that reading sociology as a main subject affects the professional performance of a student as measured on teaching practice. The evidence may then be seen to support Musgrave's (1965) contention in that sociology appears to be as effective as the traditional subjects in this aspect of teacher education. This could be due either to the fact that main subjects are irrelevant or marginal to teaching practice performance or that sociology provides the student with something which allows him to overcome any disadvantage caused by not reading a teaching subject.

The evidence suggests that social work courses may affect classroom performance in a beneficial way. The explanation of the observation that social work students are more likely to be assessed in the higher range of teaching practice grades can be sought in at least three levels: differences in the students, in their preparation and in their assessment. Such data as is to hand is unlikely to be more than suggestive. As a group social work students were undistinguished except in interview grades, though there were non-significant differences in the direction of them being slightly more intelligent and neurotic, gaining higher marks in final examinations in education and subsidiary subjects, being slightly less extroverted and having gained fewer 'A' level passes. It may be that students choosing to read a subject with such an obvious emphasis towards the child and teaching might be more strongly motivated or better 'teacher material' than students opting for more academic subjects, and it could be contended that this was recognised by college staff at the selection interview.

In terms of preparation for teaching practice, social work students are sharply differentiated from traditional subject students. The subject they read has apparent and direct relevance to the teaching of children, namely an extensive element on human growth and behaviour, and an introduction to remedial skills. Further, the familiarization with the social services, involving a number of agency visits, and an introduction to social work skills by practising social workers may affect their ability in handling the social situations involved in teaching practice. For this to be an acceptable explanation however, it would be necessary to demonstrate the use of this knowledge and skill in the classroom and to establish a relationship between the quality of such learning and teaching practice assessment.

Whilst there is an obvious need for more extensive research it can be concluded that there is no apparent disadvantage in terms of initial professional performance for the students reading sociology and a possible advantage for social work students. This raises questions about the role of the main subject in teacher education, which has been viewed as contributing to the professional performance of teachers because of the direct relationship between its subject matter and that taught in schools. Here subjects which are more related to the children, their school and social environment, and to the activity of teaching are shown to be at least as adequate in the preparation of students. At the same time it questions the direction, emphasis, and extent of education courses, in that the social work course which replicates some major elements of the subject matter apparently produces superior classroom skills.

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SUBJECT SPECIALIZATION AT SCHOOL

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THIS PAPER reports some of the early findings of a study of subject specialization at school based on postal questionnaires completed by 200 former grant recipients several years after the termination of their awards. The main findings are:

(i) evidence of culturally defined rigidities and differences in the subject choices and acceptance of specialization at school and in the subsequent career opportunities for men and women;

(ii) subject specialization at school appears to operate against science; however, simply delaying the age by which the choice against science is made will not necessarily lead to an increase in the number of scientists;

(iii) less able students specialize more in order to improve their chances at 'O' level.

It is hypothesized that involuntary subject choice is likely to be associated with poorer university course choice and performance and lower career success and job satisfaction.

Concern about the supposedly harmful effects of early subject specialization in secondary schools has increased significantly over the past decade. Though the Crowther Report urged steps to ensure 'the literacy of science specialists and the "numeracy" of arts specialists' (Crowther, 1959), it expressed strong support for the traditional pattern of specialization in the grammar school. During the 1960s, however, resistance to this pattern grew both from educationalists (Peterson, 1960 and 1971; Robbins, 1963; Miller, 1970) and from manpower planners (Dainton, 1968; Swann, 1968; McCarthy, 1968). The former group argued that early specialization restricted 'O' and 'A' level subject choice, the type of higher education aimed for, and also inhibited adolescent personality development at a time when great changes in interests, aspirations and motivations could make early subject choices irrelevant. It was also claimed that such specialization resulted in unhappy professionals in unsuitable careers as a result of irrevocable study commitments decided for them at the age of 13 or 14, and led to deep cultural divisions between those educated in the 'science' and 'arts' traditions (Snow, 1964). The second group expressed concern at the phenomena of the 'drift from science' (Dainton, 1968) and 'the brain drain' (Jones, 1967) and argued that when scientific knowledge was doubling every 15 years or so (Price, 1963) industry's need for specialists was much lower than the current output. It was further argued that education should not be concerned with the mastery of a 'fixed' body of established facts in a narrow field, so much as with the creation of possibilities for systematic self-learning and formal retraining in numerous fields throughout the working life. The need for this has been clearly shown by several surveys of professional scientists and engineers in industry and commerce (Jones, 1969; Gerstl and Hutton, 1966; Hopkins, 1967; Min. Tech., 1970).

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Survey details

This study refers to data derived from postal questionnaires sent in June 1970 to 339 former recipients of Surrey County Council major awards whose grants terminated in 1963 and 1964. These recipients comprised the former holders of degree or comparable awards from a 20 per cent systematic random sample of some 2,800 award holders. In addition those who had studied for the Dip. Tech. award, those who had married before the termination of their awards, and those who had changed course while at university or college were excluded as they were the subject of other studies which will be reported separately. After at least two follow up letters had been sent, 200 completed questionnaires were returned, a response rate of just under 60 per cent. There were no significant differences between the respondents and the non-respondents in terms of sex and number of 'O' level passes. Recipients whose fathers were in the Registrar-General's Social Class III were, however, over-represented and those who were self-supporting or whose mother was widowed under-represented among the respondents as were those who had failed their university course. All results reported in the rest of this paper refer to the 146 male and 54 female respondents.

Patterns of subject specialization

Nearly all grant recipients studied mathematics, a modern language and English to 'O' level. Table 1 shows, however, that nearly half took no biological science subject (biology, botany or zoology) to 'O' level. One fifth of the men had never studied a biological science subject at all, a fact which would clearly have narrowed their range of potential careers. More significant is the fact that four girls in ten did not study either physics or chemistry to 'O' level. The culturally defined range of appropriate careers for girls is enforced by the traditions of early specialization in the schools. Similarly, whereas for girls a study of the social sciences (history, geography or economics) to 'O' level appears to be acceptable, more than one fifth of the boys had dropped all these subjects by this stage.

Recipients were asked to indicate which of 17 specified subjects they would like to have studied longer. The responses have been summarized in Table 2 in terms of the final level studied at school. The category Modern Languages includes French and German, and Other Arts includes English (Language or Literature) and Latin. The responses for technical drawing, craft, art and music have been ignored for the purposes of the present study.

It can be seen that nearly a decade after leaving school, nearly half the recipients wished they had studied longer at least one social science subject, and a quarter at least one of the specified arts subjects. One-fifth of the respondents would like to have studied mathematics or a biological sciences subject longer. Differences in the wishes of male and female respondents add support to the interpretation given earlier that there are culturally defined rigidities in school subject choices. Thus one girl in five would like to have studied more physical science compared to one boy in 13 and one boy in three would like to have studied French or German longer compared to one girl in five. The case of the biological sciences was somewhat different. A higher proportion of girls than boys wished they had

Table 1: Early school specialization by subject group and sex (percentages)

SUBJECT GROUP	MALE (N = 146)			FEMALE (N = 54)		
	Never Studied	*Dropped before 'O'*	*Not Studied at 'O'*[1]	*Never Studied*	*Dropped before 'O'*	*Not Studied at 'O'*[1]
Physical Sciences	3	10	13	6	34	40
Biological Sciences	21	33	53	6	41	46
Social Sciences	0	21	21	0	6	6

[1] Percentages have been rounded

Table 2: Subjects wished to study longer by final level studied at school (percentages)
(N = 200)

SUBJECT GROUP	FINAL LEVEL STUDIED			
	Never or Dropped Before 'O'	*After 'O'*	*Other*[1]	*Total*[2]
Mathematics	1	17	0	18
Physical Sciences	7	4	0	11
Biological Sciences	14	4	3	20
Social Sciences	20	13	13	46
Modern Languages	11	16	3	29
Other Arts	2	24	0	26

Note: (1) Other category refers to those who wished to study longer at least two subjects in a subject group where the subjects were dropped at different levels. It particularly applies to the case of economics where there was also a wish to study geography and/or history longer.
(2) Percentages have been rounded.

studied one of them longer, but whereas nearly all the girls had studied them for a time at school, half the boys had never done so.

It is disconcerting to note that in spite of the assumptions of the Dainton Report that more flexible school curricula would favour more choices of mathematics and science generally, under one fifth of recipients wished they had pursued studies longer in any mathematics or science subject. This contrasts strikingly with the higher figures for all arts subjects and particularly for the social sciences. This seems to indicate that even in the long term, the desired pattern of subject choice operates against science. Finally, the rigidities of early specialization are emphasized by the finding that, apart from the Mathematics and Other Arts groups, nearly half the respondents had either never studied the subjects they wished to study longer or had dropped them before 'O' level.

In order to ascertain the degree to which subject choices at school met the demands of careers over a decade later, recipients were asked to indicate the extent to which they now used the 17 specified subjects in their present jobs. Only 66 per cent of the men and 57 per cent of the women answered this question on average. The responses of those who did have been summarized in Table 3. Two points in particular are of interest. Even though only one-fifth of recipients wished they had studied mathematics longer, it was the subject most used in present jobs. This table in fact provides support for an emphasis on both 'numeracy' and 'literacy' in school curricula. Secondly, there were consistent differences in the responses of men and women to the question. For all subject groups except biological sciences, on average 20 per cent more men than women used the subjects in their present job. However only one-quarter of the men used biological sciences in their present job compared to two-fifths of the women, further evidence of culturally defined career patterns which have roots, as we have seen earlier, in different patterns of subject choice.

In order to test hypotheses relating to subject

Table 3: Use of subjects in present job (percentages)

SUBJECT GROUP	*N*	*Considerably, Frequently*	*Little, Infrequently*	*Not at all*
Mathematics	137	39	49	12
Physical Sciences	142	26	39	35
Biological Sciences	115	13	16	71
Social Sciences	132	25	37	38
Modern Languages	123	13	39	48
Other Arts	117	51	24	25

specialization at school it was necessary to devise meaningful categories of specialization. An early definition of Science, Arts or Mixed 'O' level courses in terms of science subjects only, arts subjects only, or a mixture of both was found to be unsatisfactory for subsequent analysis. Of the 338 sample members for whom there was information, 259 were classified as having taken mixed 'O' level courses, 75 were arts specialists but only four were science specialists. This classification did, however, successfully illustrate the existence of a large group of arts specialists. It manifestly indicated that specialization before 'O' level operated against science rather than in favour of a simple preference either for science or for arts.

Following the work of Phillips (1969) which showed that those students who had taken four or more science 'O' level courses later took science 'A' level courses, we attempted to construct a scale of specialization based on the numbers of arts and science subjects taken in combination. This, however, again did not give us meaningful categories, particularly of those who had taken a genuine mixture of arts and science subjects at 'O' level. This approach was unsatisfactory because it did not take into account wide differences in the number of 'O' level subjects taken. From a consideration of the DES classification we therefore devised one based on numbers of 'O' level passes in each of three subjects groupings: (i) Arts (not including English Language or Social Sciences), (ii) Science (including mathematics) and (iii) Social Sciences (though unlike the DES classification we here included history). To qualify for any one of these categories a recipient was required to have passed at least two 'O' levels in that category. In order to qualify for the Arts/Science/Social Science category, therefore, at least six 'O' level passes were necessary. Consequently specialization patterns were considered only for those with six or more 'O' level passes. Twelve of the 200 respondents who had achieved fewer than six 'O' level passes were excluded from the subsequent analysis, together with three other respondents for whom there were incomplete data.

Three further modifications were made to the classification: (i) The numbers in the Arts/Social Science and the Science/Social Science categories were very small and they were therefore collapsed into the Arts and Science categories, respectively. In addition it was felt that in these cases the social science subjects were subsidiary to the main trend of specialization. (ii) Following Phillips, we distinguished those taking mixed Arts/Science courses with a science bias (four or more science subjects) from those with an arts bias (under four science subjects). (iii) However, this was not entirely satisfactory and could be misleading since a student with two arts passes, three science passes and one or more other passes (e.g. in English or a Social Science) would have been classified as having an arts bias though he would in all probability have proceeded to take science 'A' levels.

Hence the final classification split the Arts/Science mixed category in terms of two, three or four and over science passes.

Table 4 gives the distribution of respondents in terms of the six categories so distinguished and the number of 'O' level passes achieved. There were no significant differences in the number of 'O'

Table 4: Specialization at 'O' level by number of passes (percentages)

TYPE OF 'O' LEVEL SPECIALIZATION	*N* (= 100%)	NO. OF 'O' LEVEL PASSES *6, 7*	*8*	*9 or more*
MIXED				
Arts/Sc./Soc. Sc.	36	11	36	53
Arts/Sc. (4 or more Sc.)	30	17	43	40
Arts/Sc. (3 Sc.)	38	32	50	18
SPECIALISTS				
Arts/Sc. (2 Sc.)	29	55	31	14
Arts + Arts/Soc. Sc.	31	65	26	6
Sc. + Sc./Soc. Sc.	21	47	24	29
N	185	68	67	50

level passes achieved by males and females. Rather more than one-third achieved six or seven passes, a similar proportion eight passes, and rather more than one-quarter nine or more passes.

When a rough criterion of at least one-third of the 'O' level passes in both the science and arts groups was taken as a measure of the breadth of courses, then, with minor exceptions, the first three categories could be considered to be 'mixed' and the latter three categories 'specialist' 'O' level achievements. It can then be seen that specialists achieved significantly fewer 'O' level passes on average than those with 'mixed' subject results. This is consistent with an interpretation that less able students were more likely to pursue a strategy of specialization by taking a narrower range of subjects in order to maximize their chances of achieving satisfactory results at 'O' level.

The extent of specialization of the scientists is particularly striking. Six of the twenty-one science specialists had as many as nine or more 'O' level passes and yet they did not have more than one pass from our arts categories. Finally, although Phillips showed that most of those students taking four or more science subjects at 'O' level proceeded to take science 'A' levels, it is interesting to note that more than four-fifths of this Arts/Science group had eight or more 'O' levels and were clearly adequately qualified to pursue arts or social science courses as well as science courses.

Recipients were asked the main reasons for their dropping some subjects or specializing at school before 'O' level. Analysis of responses in terms of the specialization categories developed above showed no significant differences between those on 'mixed' and 'specialist' courses. Half the respondents gave 'structural' reasons only ('basic Arts or Science choice' and/or 'time-tabling problems necessitating selection from alternatives') and one in eight 'non-structural' reasons only ('wanted to specialize' and/or 'lack of interest in some subjects'). Over one-third of the respondents gave various combinations of both structural and non-structural reasons.

Apart from any influence of specialization on subsequent career opportunities, which we propose to explore in a later paper, it is also clearly important to assess the extent to which early intended career plans may have influenced the choice of subjects and early school specialization. The results, summarized in Table 5, show that those claiming that career intentions influenced their choice of subjects before 'O' level were more likely to choose mixed courses. This unexpected result, which was statistically significant, is difficult to interpret. It cannot be explained simply in terms of more able students having earlier career plans; there were no differences in the proportions claiming career influences on subject choice for different numbers of 'O' level passes. We did find, however, that a high proportion of respondents in medical or allied careers claimed their early career intentions influenced their subject choices and yet took mixed courses before 'O' levels. When this group of respondents was excluded, the relationship between career influences and type of specialization at 'O' level was reduced well below the level of statistical significance. It may be that for a much wider range of 'service' careers, mixed 'O' level courses are more appropriate whereas for many science based careers there is a tendency to specialize in a much narrower range of subjects even before 'O' level. Female respondents had less clear career plans before 'O' level than males, but those who had were more likely to take specialist courses.

Table 5: Specialization at 'O' level by influence of career plans on specialization

TYPE OF COURSE TAKEN BEFORE 'O' LEVEL	SOME CAREER INFLUENCE	NO CAREER INFLUENCE
Mixed	40	62
Specialist	20	60
Total	60	122

$\chi^2 = 4{\cdot}1$, 1d.f., $p < 0{\cdot}05$

The reasons for sixth-form specialization and the extent of intended career influences on the choice of subjects at this stage were also explored. For these purposes three categories of specialization at 'A' level were distinguished.

(i) Science specialization—at least two passes in science subjects only;

(ii) Arts specialization—at least two passes in arts subjects only or arts subjects and not more than one social science subject;

(iii) Mixed courses—either a combination of science and social science passes or arts and at least two social science passes. There were only four social science specialists without arts or science passes and these have been excluded from the main analysis.

As at 'O' level, half the respondents gave 'structural' reasons only for their choice. Sex of respondent and type of specialization made no difference to this proportion with the exception of female science specialists who more frequently gave structural reasons for their choice.

Whereas at 'O' level 33 per cent of the respondents claimed that intended career plans influenced their choice of subjects, the proportion at 'A' level more than doubled to 69 per cent. Furthermore, the proportion indicating that the influence was considerable or complete was as high as 43 per cent. As at 'O' level, a higher proportion of male respondents admitted the influence of career plans on subject choice. The proportion admitting considerable or complete career influences ranged from nearly two-thirds of the science specialists to one-eighth of the arts specialists. An intermediate proportion of 30 per cent of those pursuing mixed courses admitted career influences on sixth-form subject choice.

Finally, respondents were asked to estimate on a five-point scale the extent to which they estimated their school specialization before 'O' level by concentrating on a narrow range of subjects was voluntary or involuntary. A score of five was indicated where specialization was 'entirely voluntary, intended or desired', and one was indicated where it was 'entirely involuntary, unintended or unwanted.' An intermediate score of three was given where they considered they had been 'indifferent to any specialization'. The voluntariness scores so indicated have been given in Table 6 separately for males and females and according to the type of 'O' level courses taken. Scores of four and five indicate high voluntariness and other scores low voluntariness.

There are highly significant differences between the males and females. Whereas for three-fifths of the male specialists, specialization was involuntary, the corresponding proportion for females was only one-fifth. For men a significantly higher proportion taking mixed courses declared their specialization had been voluntary. For women, however, there was a significant relationship in the other direction. For three-quarters of the women who had taken specialist courses, specialization had been voluntary compared to one half of those who had taken mixed courses. At this stage it is only possible to speculate about the reasons for these results. One possible explantion is that subsequent career success and satisfaction are more salient for males for whom premature specialization may have closed certain possible career avenues. Consequently, men may frequently see specialization in retrospect as involuntary and dysfunctional. For many women, on the other hand, culturally determined patterns of subject choice served to socialize them for their prescribed roles of mothers and wives. Expectations of career opportunities are much more limited and blocked avenues are more likely to be tolerated than ascribed to early school specialization which is in consequence less frequently considered to have been involuntary. In addition more women than men are likely to work in 'service' occupations for which, as mentioned earlier, it may be that early specialization is not thought to be so necessary.

Table 6: Specialization at 'O' level by voluntariness of specialization and sex

Type of Course Taken	Males			Females		
	High Voluntariness	*Low Voluntariness*	*All*	*High Voluntariness*	*Low Voluntariness*	*All*
Mixed	45	23	68	11	12	23
Specialist	21	32	53	19	6	25
Total	66	55	121	30	18	48
Signif. $\chi^2 = 8{\cdot}34$, ld.f., $p < 0{\cdot}01$				$\chi^2 = 4{\cdot}06$, ld.f., $p < 0{\cdot}05$		

Conclusions

This study has confirmed that there are major differences in subject choices before 'O' level of boys and girls. These differences appear to be culturally defined and can be clearly seen in the trend away from physical sciences for girls and away from the biological and social sciences for boys. In this connection biological sciences seem to have a lower status than physical sciences. It is, however, clear that for many students these cultural patterns are relatively involuntary since more women than men wished they had studied physical sciences longer while more men than women wished they had studied modern languages longer. Analysis of the influence of career plans on school specialization, voluntariness of specialization and use of subjects in present jobs, suggested that the culturally approved differences in career opportunities for males and females resulted in a higher acceptance of specialization before 'O' level by the women. In particular, women either became housewives or more frequently entered the 'service' sector of employment where specialist qualifications were not so necessary. Furthermore, career achievement was generally not so salient for women and hence specialization not so frequently seen as involuntary in retrospect.

Although, as we have shown, simple definitions of science, arts or mixed 'O' level courses do not adequately reflect the complexities of subject specialization at this level, the evidence appears to support the view that very rigid specialization, where it occurs, operates against science. Over one-fifth of the sample had no science pass at 'O' level apart from mathematics. Yet, contrary to the suppositions of the Dainton Report, it would appear that even delaying the age by which a choice against science is made will not necessarily lead to an increase in the number of scientists. Most respondents wished they had studied social science subjects longer while mathematics and physical science subjects were mentioned by the smallest group of respondents. This strong preference for social sciences reflects their rising status during the 1960s. Only 38 per cent of those answering did not use them to some extent in their present jobs, a fact which was probably unrecognized when the sample was still at school. The recommendations of the Crowther Report, urging the literacy of scientists and the numeracy of arts specialists, would, on the basis of this study, appear to reflect present job requirements. Although our findings show that these requirements are met at a minimum level in that most grant recipients had both mathematics and English passes at 'O' level, it does appear that specialization in the sixth form precludes the continued study of both subjects. One other finding on school subject choices suggests the possibility that less able students adopt a strategy of specializing in a narrower range of subjects in order to enhance their 'O' level examination chances.

Finally, it is important to recognize that nearly half the respondents now considered that their choice of school subjects before 'O' level had been involuntary. Although there are methodological limitations in retrospective evaluations of voluntariness of subject choices at school on the basis of present job requirements, it is reasonable to suppose that involuntary subject choice for whatever reason is likely to be associated with poorer university course choice and performance and lower career success and job satisfaction, and it is proposed to test these hypotheses later.

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AN INVESTIGATION INTO RELATIVE PERFORMANCES ON A BILINGUAL TEST PAPER IN MECHANICAL MATHEMATICS

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BILINGUALISM and academic achievement in Mechanical Mathematics are examined from two major perspectives: first from the point of view which tends to equate bilingualism with inferior academic achievement: and second, from the standpoint that to test accurately a bilingual child, a bilingual question paper is essential—which has not always been the case in the past. Some recommendations are also offered concerning the format which such a question paper should take. Other major points considered by the investigators concern the reliability of teacher prediction of performance of bilingual and monoglot children, the inclinations of bilingual children towards Welsh or English usage, and the differences in achievement exhibited by bilingual boys and girls in a rural setting.

I. Introduction

The story was told to the authors of the boy who, upon leaving the examination room was asked by his teacher how he had fared in the examination. 'Quite good,' was the boy's reply, 'but I could not do question 1, part ii.' As this question contained but elementary arithmetical processes his teacher was surprised, and asked the boy the reason for his inability. 'I did not know what *remnant* meant.' The authors feel that this in itself could be enough to justify this present investigation.

There has been much research into bilingualism in the past, but as far as the authors have been able to discover, the research has regarded bilingualism as a mutually exclusive state, in the sense that the bilingual person has been expected to respond in either English or Welsh. Monoglot English and Monoglot Welsh or mixed English/Welsh samples have been presented with questionnaires in either language but only very rarely in both. In fact the only test paper familiar to the authors in research work which has been produced in bilingual form is the Deeside Test designed by W. G. Emmett in 1963. Arsenian (1937) makes this comment upon bilingualism:

'Bilingualism, or the use of two languages by the same person, is probably as old as the first occurrence in Human History of mutually understood traffic between two people speaking different languages.'

The authors accept the implication that bilingualism is the use of two languages by the same person with equal facility in both. In other words, the truly bilingual person is able to jump from one language to the other to derive meanings and formulate his ideas and speech. If a bilingual person is thus presented with a questionnaire in but one language, his bilingualism is not as such being tested; only his understanding and use of the stimulus language is being sampled.

The present investigation deviates from the path of previous research, for on no occasion as far as the authors are aware, have the investigators based their research on the simultaneous presentation of English and Welsh. Saer (1922, 1923), Smith (1923), W. R. Jones and W. A. C. Stewart (1951), as well as the Bangor Survey (1951), all investigated the relationship of bilingualism to intellectual development: the result suggesting bilingualism may be instrumental in reducing intellectual efficiency—results confirmed by the more recent analyses of Morgan (1957) and D. G. Lewis (1960). On the other hand, O. M. Edwards and S. Leathes (1911) stated at the Imperial Education Conference that they felt convinced that bilingual children should be regarded as being in an advantageous position when compared to monoglot children. This attitude has been supported by the research of Barke (1933), Peal and Lambert (1962), W. R. Jones (1933) and James (1947). Finally, A. R. Jones (1970), also found no significant differences between bilingual and monoglot groups in terms of non-verbal intelligence.

Thus, much of the available evidence is contradictory, and possibly suffers from the fact that the attainments of bilingual children are not really sampled by a test situation which is not itself bilingual. The research which has been done, however, leads to the general conclusion that:

> 'Bilingualism hampers a child's progress in problem, but not in mechanical arithmetic, presumably because the former like most school subjects involves considerable use of language.' (Morrison and McIntyre 1971).

Yet non-verbal intelligence like mechanical arithmetic involves minimal use of language, and as we have reported, bilingual children have been shown to perform significantly worse than monoglot English children on such tests (Jones and Stewart, 1951). It was this finding initially, together with a deep conviction that some bilingual children could be hampered in examination performance when presented with English only or Welsh only papers which prompted this enquiry into the performance of bilingual children on a bilingual mechanical mathematics paper.

II. Plan of investigation

Excluding the areas of Cardiganshire where 11+ examinations are still operative, the Primary Schools of the County were surveyed from the point of view of the percentage of children they contained for whom Welsh was the first language. This survey produced 27 rural Primary Schools which had more than 75 per cent of their children with Welsh as first language, giving a total sample size of 274 between the ages of 9:0 and 11:0. These limits were slightly outside those of the test we had decided to use, namely the NFER Mathematics Test C3 (9:3 to 10:8), but for certain areas of the experimental design the sample was restructured to adhere to the stipulated age limits to enable certain valid comparisons to be made. The C3 Test is an untimed test which was designed by a group of Middlesex teachers to probe 'understanding rather than skill in computation' (NFER 1970). This seemed to be an important consideration as the various Primary Schools almost certainly would have covered different ground in terms of the general Primary Mathematics Syllabus for Cardiganshire, and thus any differences coming to light might reflect this differential coverage of the syllabus thereby concealing differences which otherwise may exist. The 274 children were given a specially prepared experimental bilingual version (English/Welsh) of Test C3, of which the following is a specimen question:

$12+A=15$ What number does A stand for?

Pa rif mae A yn sefyll amdano?

answer/ateb..

Different type faces were used for the two languages, although the authors were aware that a further experimental variable would thereby be introduced—i.e. the different reactions induced in people by different type faces (Burt 1959 and Wendt 1968). However, no way of controlling this variable could be found, except to use the same typeface throughout which would we feel have been very confusing and likely to produce even greater possibilities of experimental error. As the intended investigation demanded the repetition of the NFER Test, i.e. first in bilingual form and then in separate English only and bilingual forms, it was felt that an unseen test would serve to amplify any differences which might emerge. Consequently, the authors devised a shorter third bilingual and English only test to use with the sample, which had previously been tried out in a local Primary School to ascertain its suitability in terms of linguistic content for the age group.

III. Findings

As a result of the first application of the bilingual test (i) two matched samples, B/L (bilingual) and E/O (English only), were selected from the 274 children on the basis of their obtained raw scores. Each of the two samples contained 125 children, and for each matched sample, and the overall sample of 250, the following data were obtained (total possible marks per child = 50).

Table 1: Means and S.D.'s of overall and matched B/L and E/O samples (test i)

	No.	*Mean raw score*	*S.D.*
E/O sample	125	25·78	13·40
B/L sample	125	25·82	13·24
Overall sample	250	25·79	13·17

There was no significant difference between the mean scores of the matched samples indicating a satisfactory degree of comparability. The 250 children were, however, drawn from the age range 9:0 to 11:0, and it was considered worthwhile to find the mean raw score and S.D. for the children in the 9:3 to 10:8 range for purposes of comparison with the norms provided by the C3 Test Manual. 164 children came within these age limits and achieved a mean raw score of 24·2 and S.D. 12·84. This mean raw score differs very significantly (t = 3·2, P < ·01) from the mean of 27·8 (S.D. 14·3) quoted in the NFER Test Manual, which could in some measure result from the bilingual nature of our test paper, or possibly from the under-achievement of bilingual children (e.g. Morgan 1957). However, one must also bear in mind that the English NFER Test was standardised on children in urban areas—Greater London Boroughs 1965—whilst here we are dealing with rural children. W. R. Jones (1959) suggested that, when socio-economic variables are not controlled:

> 'Studies which provide information about urban–rural differences do, in fact, indicate that rural children are found to be lower scorers than town children.'

This analysis of the scores of the 9:3 to 10:8 age group, also demonstrated the existence of a significant difference between the mean scores of the sexes in favour of the girls (t = 2·41, P < ·02). Quoting from the test handbook we read on page 2:

> 'In terms of raw scores the difference between boys and girls was 0·21 which, with a standard error of 0·2 was not significant.'

Any explanation of this difference in findings must of necessity be speculative, but the authors suggest that girls at this particular age probably spend more of their time in the home than boys which may make them better able to benefit from a bilingual paper such as the one that was presented: notwithstanding, of course, that girls at this age are more intellectually mature than boys. Before leaving this point, it is important to note that the girls' mean score on the bilingual version of the paper was not significantly different from the sample mean quoted in the NFER manual.

The next stage was to consider the relative performance of the matched E/O and B/L groups on a subsequent repetition (test ii) of test i, but given in an English only and bilingual form respectively. These two parallel forms of the test were in fact administered after one month had elapsed since the first testing. As this period of time also included the Christmas holidays, it was hoped that memory and practice effects would be minimised. The authors, however, realised that the results about to be described may reflect to some indeterminate degree the effects just referred to but they also feel that this should not deter them from expressing their findings. The Saesneg (E/O) paper was presented to one group at the same time as the Dwyieithog (B/L) paper was presented to the other group. Statistical analysis demonstrated that there were no significant differences on each of the following points:

i. E/O mean score and B/L mean score,
ii. E/O mean score and the mean score of the same group from Table 1,
iii. B/L mean score and the mean score of the same group from Table 1,
iv. Overall mean score and the corresponding overall mean score in Table 1.

There is no evidence from the analysis so far, therefore, that the bilingual child functions any the worse or better when answering bilingual or

English only question papers. However, we can again point out that the significant difference discovered in the first test between boys and girls is, in fact, repeated in the analysis of this second test ($t = 2{\cdot}7$, $P < {\cdot}01$). It was also observed in this second testing that the overall mean of 27·02 was 1·23 marks higher than that quoted in Table 1, but not significantly so. Hence, practice effects have not influenced performance to any great degree.

We may continue the analysis of the first bilingual and second E/O / B/L tests by considering the total numbers of correct responses to the individual questions made during the two testings. These were categorised in a 2 x 2 contingency table and a Chi-square analysis performed. It was found that whereas the number of correct responses in the second E/O test was significantly greater ($\chi^2 = 9{\cdot}66$, $P < {\cdot}03$) than on the first bilingual test the number of correct responses on the second B/L test just failed to show a similar significant improvement ($\chi^2 = 3{\cdot}8$, N.S.). The improvement evidenced on the Saesneg (E/O) ii paper may, therefore, be a function of either test or child, although, as the child variable is controlled in both instances through matching, the inference is that the difference between the results just discussed is the product of the tests themselves. It seems reasonable to assume, therefore, that either the bilingual aspect of the paper or its format (in this case vertically alternating rather than horizontally opposed) in some way influenced the performance of the bilingual group who fall within the limits of the age range. At the same time, however, we may note that a similar Chi-square analysis of E/O test ii responses against B/L test ii responses fails to reach statistical significance.

As all the pupils taking the E/O form of the second test had previously attempted the first bilingual version it was felt that the repetitive nature of the second test tended to equalise the intergroup performances on that test. Consequently, a further test iii was administered to the same two groups except in so far as it was found necessary to do some rematching owing to the absence of some pupils. The E/O group (now 122) took, as before, the English only version and the B/L group (also 122) again took the bilingual form. This test of 17 items was devised by the authors and was tried out in a pilot study at a local Primary School. In one particular detail, however, the bilingual form of this test was different from the other which had been employed, namely, it was horizontally opposed rather than vertically alternating. For example:

What is the difference between 36 and 27?	Beth yw'r gwahaniaeth rhwng 36 a 27?

answer/ateb..

Once again analysis of the results showed that the non-significant findings between the overall B/L and E/O means already established on the previous NFER tests persisted, and it becomes again evident that a bilingual test paper would appear to have no positive benefit, and yet no positive detriment, in its use in the assessment of performance in mathematics.

The authors were also interested to pursue the difference in performance between boys and girls which had appeared previously on the NFER test. The samples were, therefore, readjusted to include the NFER test range of 9:3 to 10:8, and the analysis revealed that the reported difference between the sexes was maintained although at a reduced level of significance ($t = 2{\cdot}1$, $P < {\cdot}05$). Reverting back to the full sample a similar correct response analysis to that already described was carried out. Although the total number of correct responses on the B/L paper was here greater than on the E/O paper this difference did not reach significance ($\chi^2 = 2{\cdot}44$, N.S.). This finding was contrary to the pattern of responses analysed earlier—although in both cases we must assume that chance errors are producing these fluctuations. In performing these Chi-square analyses it was noticed that some items contributed more to the Chi-square total than did others. As a means of investigating these item differences the variability of the differences in the number of correct responses to each of the seventeen items was determined.

Table II: Analysis of differences

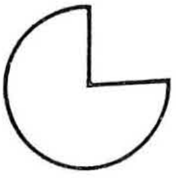
Item No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
E/O	105	85	92	96	107	77	72	85	95	97	95	100	101	74	50	60	59
B/L	103	90	92	90	111	75	69	97	99	95	96	102	101	83	42	54	66
Diff's d	+2	−5	0	+6	−4	+2	+3	−12	−4	+2	−1	−2	0	−9	+8	+6	−7
d^2	4	25	0	36	16	4	9	144	16	4	1	4	0	81	64	36	49

$$\Sigma d^2 = 493$$

Percentage contribution of item no. 8 to $\Sigma d^2 = 29$
Percentage contribution of item no. 14 to $\Sigma d^2 = 16$
Percentage contribution of item no. 15 to $\Sigma d^2 = 13$

As item 8 contributed such a large percentage towards the sum of the d²s, one is forced to ask what is peculiar about it? To investigate this, it was decided to compare all those items on which the bilingual correct response rate was superior to the English only, using the Chi-square test once again. This analysis revealed a significant difference ($\chi^2 = 4{\cdot}79$, $P < {\cdot}05$) when item 8 was included, but was not significant when item 8 was removed ($\chi^2 = 2{\cdot}93$, N.S.). The same was true for item 14, but when any other item was removed significance persisted. A similar analysis was repeated with the data provided by the responses on which the English only sample was superior. This analysis gave a Chi-square value of 2·12 which was not significant. Clearly, no item in these English only responses played as important a role as items 8 and 14 in the previous analysis. What, therefore, is a possible explanation of the peculiar behaviour of items 8 and 14? Item 8 reads as follows:

What fraction of the whole circle remains?	Pa ffracsiwn o'r cylch cyfan sydd ar ôl?



answer/ateb..............................

It would appear that either WHOLE or REMAINS are the two offending words on the English only version of the test, but as WHOLE is repeated in question 15 in which the E/O pupils achieved a superior result this must be eliminated. The word REMAINS, in fact, appears in this particular question only, and hence it is likely to have caused sufficient linguistic difficulty to the children who did not have the opportunity of cross referencing, to handicap their performance on this particular test of mathematics. Item 14 was equally interesting, the child being asked the following question in relation to a partially shaded diagram:

The area of the shaded portion is	Arwynebedd y rhan sydd wedi ei thywyllu yw
..............................cm².	..............................cm².

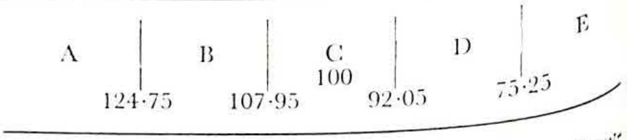
Perhaps 'shaded portion' may more readily be understood when read in conjunction with the Welsh 'y rhan sydd wedi ei thywyllu' (the part which has been darkened).

During the course of their researches, the authors have constantly encountered individuals who have claimed that some words in English have caused difficulty, and have on occasions led them not to attempt particular questions. Of course, no single word gives ubiquitous trouble but it is claimed that many individual words can cause some candidates to have difficulty in interpreting questions, and that a bilingual paper would help to clarify matters for people whose first language is Welsh. Indeed, the report of the Llandrindod Conference on Teaching (June 1970) states, on page 18:

'The majority of members felt that examination papers should be set bilingually.'

A reservation needs to be made, however, so far as the format of the bilingual presentation is concerned. We have referred earlier to vertically alternating and horizontally opposed layouts, and it is our contention that the latter is the preferable of the two. There is some research evidence in the field of visual perception in support of this view (Buswell, 1922, Vernon, 1962). These studies indicate that children of 9 or 10 are experiencing fewer, and shorter, fixations per line, fewer regressions per line, and fewer saccadic movements per line when compared with a younger child. With a vertically alternating bilingual paper, therefore, the left to right saccadic movement is interrupted if the child has to refer to a second language form of question placed below rather than alongside the first language question. Furthermore, if a child has to regress in a vertically alternating format he may have to pass through intervening lines in the other language. It is to be recommended, therefore, that bilingual papers should adopt the horizontally opposed format.

A further area of enquiry was opened up by examining the degree of reliability of teachers' subjective assessments of Welsh first language pupils when such children were objectively assessed on an English only test, as might be the case when being streamed upon initial entry into a secondary school. With this aim in view, teachers had been requested to assess each child on the usual five-point scale from A to E. The B/L and E/O groups on the second test were then readjusted to include only those children within the 9:3 to 10:8 age range. This involved considerable rematching, and ultimately resulted in two samples of 69 each (B/L mean 23·88, S.D. 13·2: E/O mean 24·0, S.D. 13·2). In point of fact, both the new samples had a rectangular distribution of marks on the second test as indeed the NFER test results were themselves similarly distributed. Following the NFER practice of normalising the distribution, the experimental data relating to the two samples of 69 were also normalised using the method outlined by McIntosh, Walker and Mackay (1962). The data were in fact normalised to a mean of 100 and S.D. 15 to accord with the NFER parameters. Now, using the normal probability curve, it was possible to estimate the number of A, B, C, D and E children that we might reasonably expect to occur in both sets. Following the pattern suggested by Glassey and Weeks (1957), the relationship between the five-point letter grading and the numbers derived from the normal curve, have been taken as follows: A 5 per cent, B 25 per cent, C 40 per cent, D 25 per cent, and E 5 per cent. Consequently, it now becomes possible to fix the upper and lower limits for each grade. For example, a mean of 100 gives a standard score 0, and 40 per cent in the C category implies 20 per cent on either side of the mean. From normal curve tables, 20 per cent of the total area above the mean gives a standard score of 0·53—hence the upper limit of the C category is 100 + 0·53 S.D., i.e. 100 + (0·53 x 15) or 107·95. Similarly, for the remaining limits:



From our normalised E/O test ii scores the following distribution of frequencies was to be expected: A 4, B 17, C 28, D 19, and E 1. While from our normalised B/L test ii scores the corresponding distribution proved to be A 4, B 17, C 27, D 19, and E 2. When the above distributions were compared with the actual observed teacher expectancies by means of the Chi-square test no significant difference exsited in either case. However, before we accept the null hypothesis, we must refer to the E category of the E/O sample in which 7 cases occurred instead of the expected 1. Using the significance of difference between proportions test, 7/69 against 1/69 proved to be significant at the 5 per cent level (t = 2·2, P < ·05). Thus, there was a tendency for teachers to underestimate the performance of the lesser able child on an English only test. Indeed, if the algebraic sum of the discrepancies between teacher estimated grade and obtained test grade is determined, then the overall E/O total of teacher underestimation is 11 whilst the overall B/L teacher overestimation is 1.

Our last analysis concerned itself with the linguistic preference which children exhibited on the bilingual version of test iii. A tentative two-part hypothesis was postulated:

(a) children whose first language is Welsh who answered in Welsh only would produce the lowest mean score, and

(b) children whose first language is Welsh would be equally likely to answer bilingually-set mathematics questions in English or Welsh.

Six items in test iii required verbal answers, and it was found that the language used in response to these items on the B/L test iii varied from child to child to the extent that some children alternated from one language to the other whilst others used both at the same time. The analysis in terms of hypothesis (a) can be seen in Table III:

Table III: Answers from children whose first language is Welsh

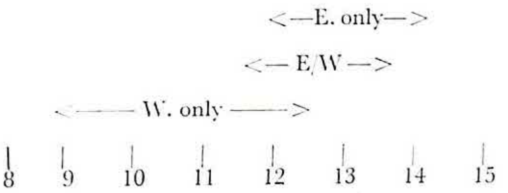
Language used	*Number of children*	*Mean raw score*	*S.D.*
English only	46	13·1	3·30
English/Welsh	36	12·5	2·51
Welsh only	32	10·7	4·98

and the 95 per cent confidence limits corresponding to each mean score are recorded in Table IIIA.

Table IIIA

Language used	*95% confidence limits for mean scores in Table III*	
English only	12·1	14·1
English/Welsh	11·6	13·4
Welsh only	8·8	12·6

(See Moroney, 1957, p. 243)



An analysis of variance was performed on the data underlying Table III which gave an F ratio of 3·79 and significance at $P < {\cdot}05$. It was therefore considered worthwhile to investigate individual differences and the following results were obtained:

(i) between the E/O mean and the W/O mean, $t = 2{\cdot}82$, $P < {\cdot}01$, and

(ii) between the English/Welsh mean and the W/O mean, $t = 2{\cdot}0$, $P < {\cdot}05$.

This supports hypothesis (a). The difference between the E/O mean and the English/Welsh mean could, however, be attributed to chance.

An investigation into the difference of performance between the sexes gave the results shown in Table IV,

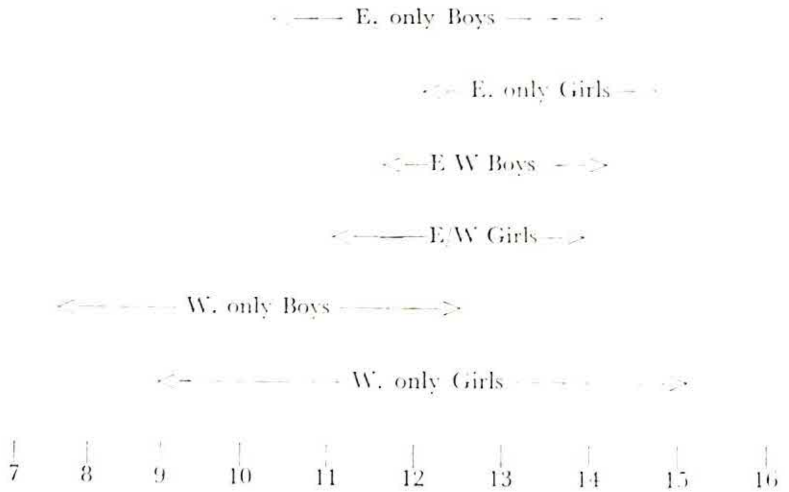
Table IV: Difference in performance by sex

LANGUAGE USED	GIRLS			BOYS		
	No.	*Mean*	*S.D.*	*No.*	*Mean*	*S.D.*
English only	28	13·7	2·70	18	12·4	3·90
English/Welsh	22	12·1	2·80	14	13·0	2·07
Welsh only	14	12·0	5·08	18	9·9	4·70

and the 95 per cent confidence limits corresponding to each mean score are recorded in Table IVA.

Table IVA

LANGUAGE USED	95% CONFIDENCE LIMITS FOR MEAN SCORES IN TABLE IV			
	Girls		*Boys*	
English only	12·6	14·8	10·4	14·4
English/Welsh	10·8	13·4	11·8	14·2
Welsh only	9·0	15·0	7·5	12·3



Once again a similar analysis of variance was performed which resulted in an F ratio of 2·38 significant at $P < \cdot 05$. Individual analysis of the groups gave the following differences:

(i) between English/Welsh boys and W/O boys, $t = 2\cdot 33$, $P < \cdot 02$,

(ii) between E/O girls and W/O boys, $t = 3\cdot 36$, $P < \cdot 01$,

(iii) between E/O boys and W/O boys, $t = 1\cdot 98$, $P < \cdot 05$.

Other differences in the group means did not prove to be significant, thus hypothesis (a) is therefore more applicable to boys than to girls.

As regards hypothesis (b) the number of responses in English or in Welsh was determined, and where a child responded using both languages a credit of one was given to each language total. (See Table V.)

Table V: Number of responses made

	English Total	Welsh Total	Grand Total	English T. Grand T.
Boys'	88	76	164	·536
Girls'	136	87	223	·609
Overall	224	163	387	·578

Assuming that a bilingual child in a truly bilingual situation is equally likely to use either language, the actual proportion of responses was tested against the expected value of 0·5 in each case. For the overall sample the difference, ·578–·500, was significant ($P < \cdot 05$) in favour of the English total, and thus hypothesis (b) was rejected. For the girls' sample, the difference, ·609–·500, was also significant ($P < \cdot 001$) in favour of the English total whilst for the boys' sample the difference, ·536–·500, was not significant.

It appears, therefore, that when bilingual children are given the choice of answering bilingual mathematics questions there is a far greater bias towards English usage rather than Welsh. This is reflected to a far greater extent by the girls. Whether this implies inherent preference for English was not determined, and indeed, it might well be that the position is reversed in other subjects and other situations. These trends need to be carefully assessed.

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Aberaeron
Beulah
Blaenau
Blaenporth
Bronnant
Caerwedros
Ciliau Parc
Comins Coch
Cribyn
Cwrtnewydd

Dihewyd
Felin Fach
Gwenlli
Llanarth
Llanddewi Brefi
Llangeitho
Llanwenog
Llanwnnen
Lledrod
Llwyncelyn
Mydroilyn
Pennant
Penuwch
Pontrhydfendigaid
Silian
Talgarreg
Tregaron
Ysbyty Ystwyth

Perhaps our greatest debt is to the 274 children who took a keen interest in the whole exercise.

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(*Manuscript received August, 1971*)

THE RELATIONSHIP OF CERTAIN 'PRE-READING' SKILLS TO GENERAL ABILITY & SOCIAL CLASS IN NURSERY CHILDREN

R. KRAUSEN

A REVIEW is given of previous investigations into visual perception as a basis for reading readiness and the differences generally shown between different social groups as to their language ability. The study reported here attempted to determine the *extent* to which visual perception skills are related to language and general ability in nursery school children. A number of perceptual and language tests were administered to a sample of 160 pre-school children and the results analysed by a number of methods to test four hypotheses put forward. A large general ability factor was found to be present in pre-school children but on language and perceptual tests it seems that a part of the children's attainment is determined simply by how they are to answer the test questions. An analysis of social group differences shows no significant difference in any visual perceptual tests only in language skills. The findings generally confirm that in pre-school years competence in visual and perceptual skills is highly related to language ability.

For the educationalist the interest in visual perception lies mainly in its importance to young children's reading. In fact these visual discrimination and drawing skills are often referred to as 'pre-reading' or 'reading readiness' skills.

The close relationship between these skills and early reading is often expressed in significant correlations between the two (Barrett, 1965a). Other researches have compared normal and backward readers and found significant differences in their discrimination abilities (Chang and Chang, 1967; Lyle and Goyen, 1968). Barrett (1965b) used a multiple regression technique to determine which skills were best predictors of reading success; he found certain pattern copying tests better predictors than IQ. De Hirsch, Jansky and Langford (1968) found the Bender-Gestalt form copying test in the pre-school years to be a useful predictor of reading at seven.

Gibson (1965) sets out three 'phases' in learning to read. It is the first phase '. . . learning to differentiate graphic symbols' (p. 1067) which seems most dependent on visual perceptual ability. This view is supported by A. L. Benton (1962).

Some studies have shown highly significant correlations between these skills and intelligence (Townsend, 1951; Chang and Chang, 1967; Goins, 1958). There is evidence that the relationship between perceptual and other cognitive skills have some inherent links. Ellis and Muller (1966) and Ranken (1963) showed that the provision of verbal labels inproved children's recognition of forms. Smith and Goss (1955) found similar results.

A number of factor analytic studies with young children have set out to determine the structural links between different perceptual tests, and between perception and general ability. Factor analysis sorts a battery of tests into a number of sets (called factors). A factor represents a type of

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ability; the tests within each factor are said to be testing something in common.

Ayres (1965) factor analysed the results of her test battery of visual perceptual, fine and gross motor, and tactual tests. There were 35 tests in all. In the eight-year-old sample all the tests fell into six major factors, with the first, in which all the tests had high loadings, accounting for most of the common variance. (Factors are determined by common variance between tests. 'Loadings' are similar to correlations). This very strong first factor indicates there is a common element tested in all the tests, despite the fact that they were selected to test specific areas of perceptual and motor skill. (Ayres names it a 'perceptual-motor and cognitive ability' factor.) However not all the common variance is accounted for by the first factor, indicating there are some specific abilities also tested by the battery.

A factor analysis of language and visual perceptual tests with five-year-olds by Ryckman (1967) yielded five significant factors, though the first factor, 'general language ability', accounted for most variance. Tests in this factor showed greatest discrimination between social class groups.

A factor analysis of British four-year-olds' test results on the Illinois Test of Psycholinguistic Ability (experimental edition, Kirk, *et al.*, 1968) yielded three factors: the first was a general linguistic factor on which all the subtests—including visual and auditory tests—loaded highly; the second separated the visual from the association tests; and the third distinguished those tests which required an automatic response, from the ones which had to be thought out carefully.

Meyers *et al.* (1964) used factor analysis on a wide range of perceptual and cognitive tests administered to two-, four- and six-year-olds, to determine if there is more specialization of abilities with age. He expected either more factors for the older children, or at least a more even spread of the common variance between the same number of factors. This would show that the factors—types of abilities—were becoming more evenly developed.

His hypothesis was not confirmed. One explanation was technical, that the small number of tests did not tap a variety of specialized skills. Alternatively, Meyers speculated that with growth there is some 'integration' of developing mental abilities which may counteract specialization.

Professor P. E. Vernon (1969) provides evidence which leads us to suppose that perceptual skills are greatly affected by environment. C. P. Deutsch (1968) argues that we might expect strong class differences. Yet Westinghouse Learning Corporation (1969) found Headstart children more able in the visual, visual-motor skills than the auditory-vocal skills in which they were severely handicapped. As discussed, Ryckman (1967) found most social class differences in his 'general language' factor. Differences between social groups on his 'structural organization' and 'visual imagery' factors reached significance only at the $p < \cdot 10$ level.

Like the American studies, British research has shown large differences in children's language ability between social groups (Yule *et al.* 1969; Mittler and Ward, 1970). These same studies have shown less marked differences on performance (non-verbal) and visual perceptual skills.

The purpose of this study is to determine the extent to which skills of visual perception are related to language and general ability in a sample of nursery school children. We shall also determine what social group differences appear in our battery of language and perceptual tests.

Method

Hypotheses

A. There is a large general ability factor in pre-school children.

B. A general ability factor accounts for less of the common test variance with increasing age.

C. There is no social class difference on visual perceptual test scores between children.

D. There is no difference in the relationship between language and perceptual scores, with social class.

Analyses

To test hypothesis A the BMD O3M Factor Analysis program (Dixon, 1970) was used in an IBM 360 computer. A principal components method extracts factors, using 1.00 in the diagonals. Orthogonal rotations to the Varimax criterion is then carried out on those factors with eigenvalues over 1.00.

To test hypothesis B principal component analyses were made on three age-divisions of the full sample (age range 3:4 to 3:11, N=45; 4:0 to 4:7, N=75; 4:8 to 5:3, N=40).

To test hypotheses C and D a one-way analysis of variance between social groups was computed.

To control for the effect of age on score residual scores were calculated using a two-variable regression programme. These residuals were used in all the analyses.

Sample

Children of this study attended one of four Slough state nursery schools and were tested in the nursery at the beginning of term between September 1969 through October 1970. The full test battery was normally divided into a language and perceptual section, and given in two sessions of about 15 to 25 minutes.

Selection for nursery places is determined first by need, i.e., for social or medical reasons (and in some cases because it releases mothers with special skills, particularly teachers and nurses), and then by date of application. The children may enter the nursery in any of three terms. They must be at least three years of age on entrance, and leave the nursery normally at the end of the term in which they reach their fifth birthday.

This is not a representative sample. In British nursery schools generally there is a higher proportion of children whose fathers (or mothers, if no father) have manual occupations. Previous research on this sample (Krausen, 1971) has shown there are no sex differences on any of the tests.

Table 1: Distribution of age and sex

AGE (years)	MALE	FEMALE	TOTAL
3:4 to 3:7	7	6	13
3:8 to 3:11	20	12	32
4:0 to 4:3	13	18	31
4:4 to 4:7	20	24	44
4:8 to 4:11	15	14	29
5:0 to 5:3	5	6	11
Full sample	80	80	160

Tests

All tests were individually administered. The following is a brief description of each test:

Perceptual tests

The Visual-Motor Integration Test. The VMI (Beery, 1967) is a form copying test. There are 24 forms, arranged in a sequence of difficulty. The test is designed for children aged from three to fourteen years of age.

The Marianne Frostig Development Test of Visual Perception: Eye-Motor Subtest (Frostig *et al.*, 1966). The Eye-Motor is a paper-and-pencil test. Children are presented with a series of parallel lines and must draw lines between each of them. Scoring is based on whether or not any part of the child's response touches the guidelines.

The Form Discrimination Test. The Form Discrimination test (Krausen, 1971) assesses the child's ability to match abstract forms. Each item consists of a row of four to five forms. The child must point to the matching forms.

The Visual Sequencing Test. This is a test of short-term memory of abstract design sequences (Krausen, 1971). The tester shows the child a flash card with a sequence, then exposes a page with three choices of sequences, one of which is exactly the same as on the flash card. The child must point to the correct sequence after a delay of five seconds between the withdrawal of the flash cards and the exposure of the three choices.

The ITPA: Visual Closure Test. The Visual Closure test (Kirk *et al.*, 1968) consists of five picture strips. Interspersed in each picture are partially-exposed objects, specified before each picture is presented. A child's score is the total number of objects identified in a 30-second exposure.

Language tests

The English Picture Vocabulary Test. The 'Brimer' (Brimer and Dunn, 1963) is an Anglicized version of the Peabody Picture Vocabulary Test (Dunn, 1959). It is a test of receptive vocabulary; the examiner says a word and the child must point to the picture which best describes it.

The Illinois Test of Psycholinguistic Ability (ITPA). (Kirk *et al.*, 1968).

a. *Auditory association* (analogies). A sentence completion format is used, presenting one statement, followed by an analogous incomplete statement, e.g., 19. 'A man may be a king; a woman may be a . . . .' ? (acceptable responses: queen, princess).

b. *Visual Association* (pictures). The child is presented with a single picture surrounded by four optional pictures, one having closer associations with the centre picture than the others. He must point to the correct choice.

c. *Verbal Expression* (expression). This assesses the child's ability to describe familiar objects. An object is presented and the child is asked to 'Tell me all about it'.

d. *Grammatic Closure* (grammar). The child completes a sentence, using the correct grammatic form. There are 33 items accompanied by pictures which portray the item statement.

e. *Auditory Sequential Memory* (digits). The child must reproduce sequences of digits spoken by the examiner.

Results

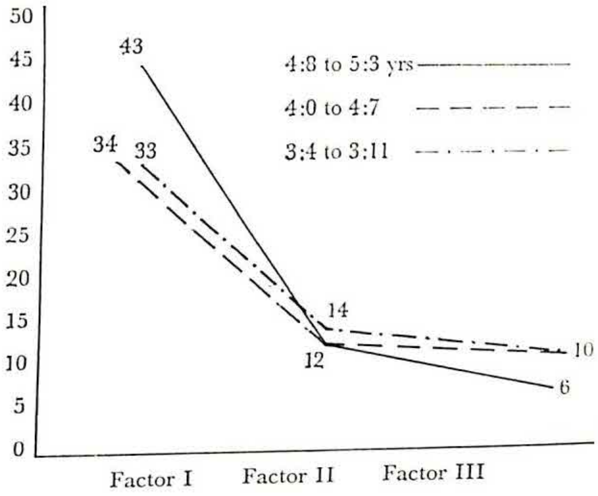
The results of the full sample (N=160) principal component analysis, and subsequent factor rotations, are shown in Table 2.

The values in each column are the 'loadings'—the correlations of each of the tests with the factor.

Table 2: Factor analysis (full sample, N = 160)

Test	UNROTATED Factor I	UNROTATED Factor II	ROTATED Factor I′	ROTATED Factor II′
VMI	·532	·588	·18	·793
Eye-Motor	·488	·301	·172	·547
Form Discrimination	·460	·165	·240	·426
Visual Sequencing	·508	·206	·249	·488
Visual Closure	·545	·322	·201	·600
Brimer	·732	−·175	·668	·347
analogics	·756	−·342	·795	·235
pictures	·602	·247	·294	·580
expression	·596	−·220	·595	·224
grammar	·735	−·426	·834	·159
digits	·520	−·258	·562	·145
Eigenvalues	3·924	1·115		
Common Variance	35·7%	10·1%		

Figure 1: Percentage of common variance of Factors I, II and III



Looking down the column of unrotated Factor I, there are consistently high loadings on all the tests. This means that all the tests are interrelated, that they are testing something in common. Factor I is a 'general ability' factor, confirming hypothesis A (that there is a general ability factor on which all tests have high loadings).

In Factor I the language tests generally load highest. One interpretation of this is that while all the tests assess general ability, the language tests do it best.

Factor II is bi-polar (minus and plus values) and seems to resolve the perceptual and language tests.

Rotation of factors is a statistical process which maximizes the independence of the factors. In this case it draws the distinction between language and perceptual tests—Factor I′ the language factor, Factor II′ the perceptual. Factor II′ may be sensitive to the way children are asked to respond i.e., the highest loadings appear on those tests which can be answered without speech. This could explain the presence of Brimer and pictures, both language tests. Unlike the other language tests, on these the child is asked simply to point to the correct choice.

A factor analysis of three age groups yields three factors for each group (see Figure 1). The general ability factor, Factor 1, accounts for more of the common variance with increasing age

(32·6 per cent, 33·8 per cent, 43·2 per cent). In hypothesis B we expected more specialization of skills—that test scores would be less affected by general ability as children grew older.

Table 3: Distribution of social groups

SOCIAL GROUP	N	OCCUPATION
Social Group 1	31	non-manual (white-collar)
Social Group 2	65	skilled manual workers
Social Group 3	39	semi- and un-skilled workers
No information	25	
TOTAL	160	

Table 4: Significant differences between social groups: results of analysis of variance

TEST	F-RATIOS (N = 135)
VMI	0·035
Eye-Motor	1·298
Form-Discrimination	0·437
Visual Sequencing	0·160
Visual Closure	0·760
Brimer	2·837
analogies	4·566 †
pictures	1·728
expression	0·474
grammar	4·979*
digits	0·523

† p < ·05 * p < ·01

Table 5: Means and standard deviations by social group

TEST		SOCIAL GROUP 1	SOCIAL GROUP 2	SOCIAL GROUP 3
VMI	mean	–0·001	0·089	-0·018
	SD	2·350	2·209	2·033
Eye-Motor	mean	0·450	–0·232	0·377
	SD	2·409	2·269	2·090
Form Disc.	mean	–0·328	–0·296	0·199
	SD	2·875	2·748	3·003
Vis. Sequence	mean	–0·148	0·114	–0·075
	SD	2·232	2·619	1·863
Vis. Clos.	mean	0·371	0·203	–0·745
	SD	4·621	4·463	3·825
Brimer	mean	1·663	0·733	–2·663
	SD	8·152	9·246	6·821
analogies	mean	1·837	–0·255	–1·592
	SD	4·963	4·803	4·405
pictures	mean	0·659	–0·162	–1·417
	SD	4·588	4·917	4·613
expression	mean	0·624	0·119	–0·466
	SD	5·742	4·405	4·219
grammar	mean	1·805	–0·053	–1·171
	SD	3·851	4·226	3·468
digits	mean	0·867	–0·407	–0·446
	SD	6·323	5·919	6·415

Therefore hypothesis B is not confirmed.

Table 4 shows the results of an analysis of variance between social groups. Such an analysis determines whether the variation of test scores *within* each of the social groups is more than *between* them. If it is or if the between-group difference is only slightly more than that within any of the groups, we say there are no significant differences.

The higher the F-ratio in Table 4, the greater the differences between social groups. Analogies and grammar show significant social group differences. None of the perceptual tests show differences; indeed the F-ratios are not much higher than zero. Hypothesis C (no social group differences in perceptual scores) is therefore confirmed, and hypothesis D, that there is no difference in the relationship between language and perceptual scores, with social class, must be rejected.

Other evidence of the different pattern of relationship with social groups may be seen from Table 5. Of the perceptual tests, only the Visual Closure shows a consistent trend of lower scores with a drop in social group. All language tests show this trend.

Discussion

We have seen in Figure 1 that the general ability factor, Factor 1, accounts for more test variance with increased age. In other words general ability seems to have more effect on a child's test score as he gets older. This contradicts a commonly held theory, that as children grow they tend to develop individual skills, which become more or less independent of each other. But Meyers (1964) found similar results to ours, and he speculated that though there is specialization of skills, counterbalancing it is a tendency for 'integration' of developing mental abilities.

With our data it is difficult to confirm either explanation. The difference in Factor I's variance over the age groups is not large. Indeed unreliability of young children's test scores may have produced enough 'error' variance to bias this result.

It is worth mentioning this issue of test reliability, particularly as it relates to young children. Anyone who has had the opportunity to test pre-school children knows the importance of 'extrinsic' influences in determining results. The relationship between tester and child, the child's mood and how much sleep he had the night before, his momentary interest and attention; all of these factors take their toll on the reliability of the test results.

The full sample factor analysis (Table 2) yields two factors. The first and largest factor, accounting for 35·7 per cent of the variance, confirms hypothesis A, that there is a large general ability factor in pre-school children.

Why should there be this large general ability factor? It may reflect 'integration' of abilities; inherent links between skills. But Kelly (1928) interpreted a large general factor in his factor analysis of five-year-olds' test scores as 'testability' —simply, the ability to take tests. Gesell (1940) points out that when we are testing young children we are also testing inadvertently their ability to understand directions and test procedure.

Gesell (1940) also described the importance of 'strategies' in completing cognitive tasks. From observations of children's test responses it does seem that the 'general ability' to repress the first impulse, and to go about solving the test problem slowly, gives children an advantage on nearly all tests in this battery. (The importance of strategy in perceptual-motor tasks are discussed further by Zaporozhets, 1965; and Elkind and Weiss, 1967.)

The second unrotated factor of the full sample analysis is bi-polar, the minus/plus sign dividing the perceptual and language tests. The language tests with highest negative loadings are also the ones which require an oral response. Those with the lowest loadings (nearest to the perceptual tests) are the Brimer, and pictures test, both requiring only a pointing response from the children.

The rotation separates the language and perceptual tests, and again focuses the importance of the response mode. The Brimer and pictures tests show substantial loadings on the 'perceptual' factor (Factor II'), though they are tests of language ability. Here we have shown the importance of the actual test format on attainment. It seems a part of children's attainment is determined simply by how they are to answer the test questions, either orally or by pointing.

Turning to the analysis of social group differences (Table 4) there appears to be no significant difference on any of the visual perceptual tests. Only the Visual Closure test shows a trend of decreasing score with a drop in social group (Table 5).

The Visual Closure test is the only one of the perceptual tests which uses as its 'stimuli' line drawings of common objects, such as shoes, bottles, fish, hammers and saws. It may be that skill in this test is affected by experience with books. The amount of time a parent spends reading to his or her child, could very well differ between social groups.

Within each of the three social groups there is a great variety of occupation groups. For example a child of a bank clerk and that of a professor would both be classified in Social Group 1, non-manual workers. Such within-group variety makes it very difficult to determine if there are significant differences due to home background.

Yet other research with more precise occupation classifications has confirmed our finding that perceptual skills are less sensitive to social class differences than language skills (Westinghouse Learning Corporation, 1969; Ryckman, 1967; Mittler and Ward, 1970; Yule *et al.*, 1969). We are faced with contradictory evidence (Vernon, 1969, in particular) which contends that perceptual skills are greatly affected by the social environment. How can this divergence be accounted for?

The main point here is that social class, as defined by occupation of parents, is only an indirect measure of a child's social environment. Each socio-economic group is assumed to contain people whose social, cultural and recreational standards and behaviour are similar. Occupation must therefore stand for other variables, such as parental attitudes, aspirations, and attention; housing conditions, child-rearing practices, and other associated conditions which affect a child's experience, and guide its interests. We are not measuring the effect of these variables, only the effect of a 'representative' variable,i.e., occupation of parents.

To determine whether a direct link exists between environmental conditions and children's ability one would need to study variations of specific home background variables on ability. Such a research would require a very large sample so as to keep other important variables constant.

Main conclusions

There is a great deal of evidence supporting the importance of visual perceptual skills in early school success. The association with reading is strong, particularly in the early stages of reading where children are primarily learning to discriminate differences in letter and word shapes.

Our findings show that in the pre-school years competence in these skills is highly related to language ability. The two are part of what we have called 'general ability'. This general ability has increased influence on test scores as children get older, contradicting a popular theory that children develop more specialized skills with age. An alternative explanation for our results is that with growth there is 'integration'—greater association of skills—balancing the effect of specialization. One must consider that the differences between the age-groups were small, and given the relative unreliability of pre-school children's test scores, this result may have been influenced by 'error' variance.

As regards the social class findings, our results confirm what a number of other studies have found on both sides of the Atlantic: that the main social class difference between pre-school children (speaking about cognitive skills only) is in language skills. There does not seem to be any evidence of perceptual differences, except perhaps in one test of picture discrimination (the Visual Closure test) which may be affected by the amount of contact a child has had with books.

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BOOK REVIEWS

Phonics and the Teaching of Reading

by J. M. Hughes
Evans Brothers, 1972, 126 pp., £1·15

Very few books on the teaching of phonics have been published in this country over the past ten years. Following such reports as Cane and Smithers (1971)[1], many teachers are realizing that a more structured reading programme can raise reading standards despite other difficulties, though no one imagines that a return to 'phonic' work eliminates all the problems. From well over thirty basic reading schemes less than half-a-dozen reveal any phonic structure or control. Consequently, teachers are searching for support material to balance the look-and-say whole word approach found in so many of our reading books. From this point alone *Phonics and the Teaching of Reading* will attract many readers. This is a very slim volume and consequently somewhat inadequate. There is no doubt that, like Mr. Hughes' former publication *Aids to Reading*, it offers some very practical advice; two-thirds of the text contains detailed suggestions for the making of reading apparatus. Some of the ideas are to be commended, and obviously all have been usefully tried with children. It is regretted that no reference has been made to slides, overhead projectors, film strip, magnetic materials, cassettes, etc. All these can make any phonic teaching much more stimulating. Shared activities rather than individual ones provide rewarding incentives.

Finally, I would have appreciated the reasons for Mr. Hughes' order of phonic skills. It interests me that he places 'aw', 'au', long before the 'silent e' rule. The latter is fairly consistent and usually easily understood by most children.

Teachers and students will find this small book useful, but I hope they will question some of its contents.

BETTY ROOT

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[1] *The Roots of Reading*. Slough: NFER

Colleges of Education Learning Programmes: a Proposal

by K. G. Collier, H. P. R. Hodge, T. F. Horton and M. Rathborn
Working Paper 5 of the National Council for Educational Technology, 1971, 90 pp., £1·20

The province of Educational Technology reaches far further than audio-visual aids and closed-circuit television. To quote from the text of this book: it involves 'the application of systems, techniques and aids to improve the process of human learning'. What, the reader may ask, does this mean if it does not refer to the equipment outlined above? In fact, Educational Technology aims to be a teaching discipline and, while modern techniques may be used to help enhance a student's learning, they are a means only, not an end in themselves.

Essentially, Educational Technology is a way of approaching the promotion of learning. It demands firstly a clear statement of the objectives of a course; secondly, the selection and use of materials to attain these objectives and, thirdly, the use of appropriate methods of measuring student performance, to assess the effectiveness of the course and its materials, i.e. have the objectives of the course been attained by all students? The book sets out a proposal for developing materials, workshop conferences and systems of consultation and disseminating information, these being developed within the colleges of education themselves.

It is perhaps the reasoning behind this report that makes it worthwhile reading for the members of the teaching profession, rather than the recommendations themselves (which are costly; £660,000–£760,000, and unlikely to be implemented). However, let us hope that this expectation will be proved wrong, for even the mounting of a smaller scheme would be well worth while.

JEAN M. ROSS

The Curriculum
edited by Richard Hooper
Oliver and Boyd for the Open University Press, 1971, 505 pp., £1·25
Curriculum
edited by Martin Levit
University of Illinois Press, 1971, 396 pp., £5·75
Curriculum Organization and Design
edited by Jack Walton
Ward Lock Educational, 1971, 86 pp., £1·30

Three books each of collected articles or papers concerned with the curriculum could well have been much the same. They are not. This is as much a commentary on the vague boundaries of curriculum as a field of study as on the interests and predispositions of their editors—though in no case is the hand of the editor heavy.

Hooper's 'readings' is a sweeping, best value for money collection from many levels and does not ignore the provocative and contentious. Levit's selection is confined largely to contributions from philosophy and is only surprising for its omissions, especially of any reference to the role of ideology in curriculum building. In other respects it is a valuable selection.

Walton's *Curriculum Organization and Design* stands in a somewhat separate category as a collection of conference papers. The most interesting is by Shaw on management and innovation, but all are of good quality and in a short form provide a quick appreciation of current preoccupations.

P. H. Taylor

Guidance and Counselling in Schools
by P. M. Hughes
Pergamon Press, 1971, 241 pp., £3·25
School Counselling
by H. J. Taylor
Macmillan Education, 1971, 160 pp., £1·60 (hardback), 92p. (soft)

In spite of the similarity of their titles, these two books serve different purposes.

Anyone who wants a clear understanding of the issues facing guidance and counselling in schools today should read Mr. Hughes' book. In a thoughtful well-referenced presentation he puts guidance and counselling firmly in their historical perspective and builds up a case for a service which would ensure that *every* child benefited from them rather than one which caters mainly for the problem child. So long as the school counsellors are employed to function as 'problem case workers' and the approach to guidance is one of dealing with crises as they arise, we shall continue to miss out on the very real contribution that these activities can make to individual development and to the total educational process. The traditional reply to this view is that the necessary resources are simply lacking but Mr. Hughes demonstrates convincingly that they should be found.

In the course of his exposition Mr. Hughes has a great many useful things to say for practising counsellors and careers teachers and the book should be a useful guide to them and to trainees.

Mr. Taylor gets rather closer to the coalface. In his preface he says he is 'writing primarily for students in colleges of education' and he is as good as his word in producing a sound practical introduction to the duties and functions of the school counsellor.

After an introductory chapter in which he raises a number of problems about the relationship of guidance and counselling to schooling today without suggesting how they might be resolved, he proceeds in succeeding chapters to show how the school counsellor can really help. Topics covered in a clear and essentially practical way include: the counsellor's role in relation to other members of school staff and outside agencies; vocational counselling; the contribution of psychological theory and counselling methods to the understanding of adolescent development; the value of objective testing, careful observation and the use of sociometry; the role of parents in the counselling setting and the approach to children with special needs, e.g. maladjustment, truancy. Individual and group counselling are distinguished and the difficulties and traps for the amateur in the latter are discussed.

In the light of a clearly formidable range of guidance and counselling functions, Mr. Taylor makes the case for the flexible team approach involving members of school staff and outside agencies.

Mr. Taylor's treatment is at times rather synoptic but the essential ingredients are there

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and the book should prove a useful aid to training and a stimulus in trainee discussion groups.

B. M. Moore

Projections
Social Environment and the Urban School

by E. Midwinter

Ward Lock Educational, 1971, 110 pp., 47 pp., £1·00, 50p.

These two books are concerned with work initiated by Dr. Eric Midwinter, Director of the Liverpool Project. The first will be of interest to all concerned with modern educational issues and the second mainly to teachers, especially those in urban areas.

Projections gives a comprehensive report of the work of the Liverpool E.P.A. action research team set up in 1968. This was one of five sponsored by the government to find ways of improving educational opportunities in urban areas. The book includes ten occasional papers published during the life of the project (1968–71) on such disparate topics as pre-school and adult education, school curriculum and home and school relationships. Even so, the book is an integrated one unified by the common theme of bringing school and community into alignment.

The best chapters are undoubtedly those contributed by the editor himself although the others provide important supportive material. Dr. Midwinter's philosophic approach is stimulating and provocative. He refers to attitudes and misconceptions which hamper clear and constructive thinking about the educational needs of children in educational priority areas. Furthermore, he poses some very penetrating questions about assumptions underlying current educational practices. He outlines sympathetically the problems of teachers, parents and children in areas where school and community are not aligned. His theories may not be generally acceptable because they question long-established educational traditions and concepts. However, they warrant very careful consideration and should certainly not be rejected until they have been fully explored and understood in the context of their practical application. References are made to this in various parts of the text. The emphasis on social education and community schools rather than on compensatory education may well pave the way to greater use of potentialities for people in many different kinds of communities.

Dr. Midwinter is no mere theorist and his work includes references to projects based on his educational philosophy. Other chapters in the book give detailed accounts of some of these projects and those describing the pre-school and adult education experiments are of particular interest.

Social Environment and the Urban School will be of great value to teachers who wish to implement this approach. This small volume gives a succinct summary of his philosophy and practical suggestions for teaching in an urban environment. It shows how the child's social background and experience can be utilized in the curriculum and suggests ways of gaining parental involvement and co-operation.

The initial project 1968–71 ran for too short a time to introduce and assess such fundamental changes as Dr. Midwinter advocated. However, the evidence of the initial projects was encouraging and the decision to continue the work at the new centre 'Priority' is a very welcome one.

Dr. Midwinter has brought a breath of fresh air to the vexed problems of educational priority areas. He has made explicit the factors which have caused frustration to pupils and teachers alike and has suggested means of alleviating these. Furthermore, the account of what has been achieved during the course of the experiment shows that his proposals are practicable.

Projections is strongly recommended to all readers interested in social and educational problems. It contains a wealth of important material and stimulating ideas presented in a lively way. This book is eminently readable.

Social Environment and the Urban School will have a direct appeal to all practising teachers. It will be of considerable help to teachers who wish to experiment along the lines suggested by Dr. Midwinter.

M. Procter

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(*Editor:* J. D. NISBET, Department of Education, University of Aberdeen, Scotland)

Vol. 42 Part 3 November 1972

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Editor **ALFRED YATES** *assisted by* **GABRIEL CHANAN** *and* **MONICA TAYLOR**

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A review for teachers
and all concerned with
progress in education

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February 1973

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EDUCATIONAL RESEAR

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and all concerned with
progress in education

The journal of the
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Educational Research
in England and Wales

Volume 15 No 2
February 1973

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In this issue:

THE EDUCATIONAL OBSTACLE RACE: FACTORS THAT HINDER PUPIL PROGRESS

HEADTEACHERS' EXPECTATIONS AND THEIR PUPILS' SELF-CONCEPTS

THE LANGUAGE OF THREE- TO FIVE-YEAR-OLDS IN PRE-SCHOOL EDUCATION

OCCUPATIONAL CHOICE AND STUDENT VALUES

Editorial Note

We have received many requests for the reproduction of the address delivered by the late Stephen Wiseman at the Foundation's Annual Conference in December 1970.

We include it in this issue not only to satisfy this demand but also because, in both content and style, it provides an admirable illustration of the kind of article that we believe should be featured in a journal that is avowedly concerned to demonstrate the relevance of research to educational practice.

We shall continue to announce specific research findings and to summarize the evidence that has been accumulated in particular fields of interest. We would welcome more articles, however—for which Dr. Wiseman's contribution furnishes an admirable exemplar—that are concerned with the interpretation and appraisal of research and which help to relate its results to the problems with which administrators and teachers are confronted.

THE EDUCATIONAL OBSTACLE RACE: FACTORS THAT HINDER PUPIL PROGRESS

S. WISEMAN

THIS article formed the address given by Dr Stephen Wiseman to the Annual General Meeting of the NFER in December, 1970 when he was the Foundation's Director. The paper is published here for the first time in tribute to Dr Wiseman's work in the Foundation until his untimely death in July, 1971.

The title of my address should not be misunderstood. The use of an obstacle race as a metaphor is not intended to provide a more academically respectable version of the term rat race: I do not view pupils as rodents, either rats or lemmings. Nor is the term intended to emphasize competition (a central and essential element in rat race ideology) but rather the exacting and difficult advancement towards a goal—the goal of personal development and the realization of potential. Perhaps a much closer analogy is the assault course, where the obstacles are so devilish, so ingenious, so demanding, that one has no concern with competition with others: all one's store of energy is devoted to the immediate obstacle, at the same time wondering despairingly whether enough strength will remain to surmount the next, and the next, and the next.

Thirty years ago the factors seen by most teachers as those affecting pupil progress were cognitive: if the lad had brains, he prospered; if not, he struggled. Good teaching and sound methods could help the slow learner, but only marginally. By and large, the pattern was laid down and one couldn't be expected to make a silk purse out of a sow's ear. Since then, our horizons have somewhat widened, and we have come to recognize that the situation is not quite so simple. Research over the past two decades has demonstrated the powerful effects that environment has over educational progress. Many studies in the United States and Britain have made it clear that a very high proportion of our slow learners are not born so, but made so. The pattern is not inexorably fixed at birth. This is not to deny the importance of genetic factors: these play such an important part in the physical development of the human being that it would be very surprising if they were not also involved in mental and emotional development. The fierce controversies over the precise proportion of influence exerted by nature as opposed to nurture are of importance to the geneticist and the psychologist, but for the teacher I suggest that they are largely irrelevant. He is faced with facts which seem to me to specify and define quite clearly the educational philosophy which must guide and structure his educational methods. Knowledge of the genetically-determined innate abilities of his pupils is inaccessible to him, and will remain so. The search for culture-free or culture-fair tests of intelligence is an illusory one. The effect of environment begins at the moment of birth—and may be earlier—so that by the time the child arrives at the gates of the school he may already be heavily handicapped. Subjective judgement as to which children are most likely to be disadvantaged is enormously fallible. Although there is a correlation between deprivation and socio-

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As inquiries suggest that Institutes and Colleges may be interested to obtain quantity offprints of Dr Wiseman's article, a limited number have been printed and may be ordered, while stocks last, from NFER Publishing Company Ltd. (Book Division), 2 Jennings Buildings, Thames Avenue, Windsor, Berks., SL4 1QS. Price: *Minimum* 12 copies 70p (postage free); 25 copies £1·40, and *pro rata* for larger quantities. Remittance required with order.

economic level, the differences within social classes are much greater than those between social classes. Many a suburban child is at greater risk than his inner-city classmate. And to add to the teacher's difficulties, the potentially brightest of his pupils are likely to be affected more seriously by environmental handicaps than are the average and the below-average. In this group we have, perhaps, the most serious area of undetected and undeveloped talent: those boys and girls from poor homes and blighted neighbourhoods who, nevertheless, cope successfully with school, and keep up with the average. The school may point to them with pride as evidence of their 'success' with 'unpromising material', not realizing that, potentially, they may belong to the top reaches of the ability range. This buried talent remains undetected by teachers, by parents, and by the pupils themselves.

In the face of all this the teacher must come to his task with the belief that *every* child possesses potential as yet unrevealed, that there is no ceiling to development—indeed, that the very concept of a ceiling is, in the school setting, profoundly anti-educational. Accepting this, however, he must also be realistic, and even humble, recognizing that his success must inevitably be partial: none of us ever reaches full potential. Only in Utopia is complete success possible. But present achievements fall far short of what is possible. Only by determined effort, with the goal clearly in mind, are we likely to develop the diagnostic tools and the educational methods necessary for improvement and progress.

The research of the last twenty years to which I referred earlier has produced some pretty depressing results. I am thinking in particular of the demonstration that, surveying the effect of environment on educational attainment, the home influence is very much stronger than that of the school: the Plowden researches, for example, demonstrate this very clearly. These researches supported other work (particularly from the United States) in finding that the factors in the home environment that were most strongly related to educational attainment and progress were those concerned with the literacy of the home and with the parents' attitude to education. The reaction of the Plowden Committee to these results was an interesting one. Faced with the fact that home circumstances heavily outweighed school effects on educational attainment, they tended to concentrate their recommendations on attempting to reduce the home effect, rather than to increase the school effect. They were led to this policy, perhaps, by the demonstration that adverse home factors were largely attitudinal in nature, and by a belief that attitude-change was the most promising line of attack. There seems little evidence for optimism here, however. The results of very many researches in the field of attitude-change suggest: (a) that this is difficult to accomplish, (b) that change tends to be small, (c) that change tends to be temporary. Nevertheless, the Plowden Report was right to emphasize the importance of parental attitude, and to underline the crucial roles of the teacher and the school as mediators of this. The recommendations on participation by parents, on parent/teacher relationship and on contact between home and school are all to be welcomed. What one might query is the relative lack of an equally vigorous attack on the school sector, with specific recommendations designed to *increase* the school effect at the expense of the home and neighbourhood effects. This may be a little unfair: on re-reading the 197 recommendations of the Plowden Report, there are undoubtedly very many indeed that can reasonably be categorized as those designed to do just this. But they are well scattered, and the impression from the Report itself is that, so far as deprivation and disadvantage are concerned, most of the eggs are in the basket labelled 'home/school relationships'. No mention will be found in the Report itself, for example, of the findings in Appendix 9 that bright children are more affected by environmental handicap than duller children. One of the purposes of this paper is to look more closely at the school, and to ask how many of the obstacles faced by the pupil—and particularly the pupil at risk from disadvantage and deprivation—are provided by the school itself. If these can be recognized, then we may hope that attempts to reduce their effect may significantly increase the power of the school to compensate for adverse forces lying outside its walls.

Perhaps the single most significant result of the research work of the '60s is the incontrovertible demonstration that environmental deprivation bears most heavily on the earliest years of childhood, and that, before ever the child reaches the infant school he is already handicapped in the vital area of language development. If nothing is done to remedy this, he arrives at school unable to take advantage of the opportunities offered, the deficit becomes cumulative, and he is firmly and permanently lodged in the ranks of the slow learners. Hence the Plowden recommendations for the recognition of Educational Priority Areas and for nursery school provision within them. The last Government reacted with commendable promptitude to these recommendations at least. (One might comment, however, that the £3 million allocated represents less than 3 weeks' expenditure on Concorde, and observe that, in spite of the technical complexities involved in building a supersonic airliner, the problems underlying the intellectual development of thousands of disadvantaged children are a great deal more complex—and intractable.) But setting up nursery schools is only the first step. The real question is, what do we do within them? The British nursery school tradition, originating in the pioneer work of Rachel McMillan and Susan Isaacs, is a famous one. It stems from the philosophy of Dewey and the psychology of Freud. From Freud came the belief that play in childhood had two functions of importance to the educator: a didactic function and a therapeutic one. Through play, the young child learned to come to grips not only with his physical environment but also with his emotional environment. Jealousy, anger, frustration—and how inevitable these are for the pre-school infant—could be 'played out' and so release his energies for intellectual and social development. From Dewey came an analysis of the learning process, with strong emphasis on the motivational element. The child, for Dewey, was not a receptacle for knowledge, but an active seeker after information and skill. The essence of education was the provision of an environment which would prepare the active learner to develop at the optimum rate. The teacher's role was to provide materials and to pose problems—to place the child in a 'forked-path situation'—and to be at hand to help with new material, or with advice and support, when this proved necessary. Both these strands, Freud and Dewey, led to a strong emphasis on the *activity* of the child, in largely unstructured situations.

How successful will such a programme be in remedying the language deficiencies of the disadvantaged child? The answer seems to be, very little. It is an admirable programme for a middle-class child from a tidy suburb, providing him with the activities and opportunities denied to him at home, but most of which are commonplace to the foot-loose and fancy-free youngster from the slums, with little or no parental supervision. It is no doubt true that with such a regime the deprived child's vocabulary is likely to increase somewhat, particularly in its store of nouns. But how important is this? As one investigator has pointed out, ignorance of the meaning of 'sheep', or 'elephant', is unlikely to prove a lasting educational handicap. Ignorance of the meaning and function of such words as *if*, *but*, *or*, *because*, *since*, *when*, is a much more serious matter. And experience shows that appreciation and command of language structure cannot safely be left to chance, under the stimulus of free play and activity methods. *What is required is a planned* and graded *attack*, using *a language programme* specially *devised to meet the known deficiencies of the disadvantaged child.*

The new Minister of Education has expressed herself as being concerned with quality as well as quantity in education. If she really means this, she must ensure that the EPA nursery school programme is supported by adequate orientation and training courses for the teachers concerned, otherwise the initiative, the energy and the financial outlay will be largely wasted and the major objective unachieved. Surely, you will say, we can rely upon the teachers to adapt their methods to this new and challenging task. But can we? One of the research officers in the Foundation's Pre-School Project,[1] Mrs Helen Quigley, has recently made a survey of the opinions of a number of nursery school teachers to the structured language programmes which are being used for disadvantaged children. Let me quote some of the comments which she collected from the teachers. First, for balance, a couple of protagonists: 'I think it's tragic—absolutely tragic—

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[1] i.e. in 1970.

that all the children in the nursery can't do it. They all need it so much.' And: 'I know I *ought* to do language every day, but I've never been as systematic as this before. I'm definitely being kept on my toes.' But now listen to these: 'There's quite a few things that are useful, but I'd really rather work in my own way.' And 'There's a lot of very interesting equipment but we'd rather use it in our way than the directed way.' And: 'I don't like it. I think it's soul-destroying and an insult to my integrity.' And: 'I don't know which side I've fallen down on. The children enjoyed it and certainly learnt a lot. There's no doubt they've improved beyond recognition—but I feel the idea is against all nursery principles.' And, finally: 'It's often a grind to get through it. I look at the lesson and know it's going to be boring and so, of course, when it comes to the lesson it *is* boring. The children don't enjoy it and neither do I.'

It is true that much of the criticism derives from the fact that the programme in common use is American in origin, and that, apart from the chauvinistic reaction to an educational import, it is less than satisfactory in content and approach for British schools and British children. But it is also clear that here *we have a strong rejection by many teachers of* any *alteration in the traditional approach* to nursery education. The *strength* of feeling *and depth of emotional response* is often *more appropriate to religious controversy than to educational practice*. Educational philosophy has become educational dogma. Rachel McMillan and Susan Isaacs, both responsive to new ideas and concepts, both basing their teaching on the newest developments in educational thought, must be turning in their graves. *How can* the *training courses* of these teachers *have left them so inflexible, so unadaptable, so unresponsive to new insights? The educational world is changing around them, but they remain encapsulated within the shell of holy writ*. The function of our colleges of education is to produce flexible professionals, adaptable to change and responsive to new demands. Some of them have clearly failed, producing instead missionaries preaching the one true doctrine, arrogantly repudiating any deviation from it. And this is all the more remarkable when one considers that a typical day's programme for nursery school children from deprived areas contains no more than 40 minutes or so of structural language teaching, with the rest of the day devoted to traditional free activity and play.

This is just one more example to add to the growing evidence that teacher attitude is one of the most powerful forces—for good or ill—affecting pupil progress. Dr Pidgeon's recent book, *Expectation and Pupil Performance* (1970), has added to this evidence, and two of the Foundation's recent research projects have provided massive support to the contention that the achievements—and the aspirations—of pupils are more immediately and more strongly affected by teacher expectations than by teaching method or by school organization. In the French project, the major aim of which was to evaluate the teaching of French in primary schools, the attitude of the teachers to this innovation was investigated. A quarter of the teachers surveyed agreed with the statement 'teaching French to low-ability children is a criminal waste of time'. After two years of the French programme, results on a listening comprehension test showed that schools with teachers holding these views had a significant concentration of low-scoring pupils, while high-scorers occurred most frequently with teachers holding the view that all children should have the opportunity of learning French. In this research, as with others, a positive correlation was found between the opinions of the teachers in a school and the opinion of the head teacher: the implications of this for positive action are as yet less than fully recognized. A second research, the Foundation's study of *Streaming in the Primary School* (Barker Lunn, 1970), also shows very clearly that teachers are more important than organizational structure. A school may be 'unstreamed' so far as pupil-allocation to classes is concerned, but if it is staffed by 'streaming teachers' the methods within the classrooms and the effects on the children will be similar to those found in schools with a totally streamed structure and policy.

If I were to be asked to specify the single most significant outcome of educational research in the last decade, I think I would select just this one: the power of teacher attitude and teacher expectation. It seems to me to have profound significance in two directions. First, it points to a new orientation in action to achieve progress in education. Since the war, we have become obsessed with structure and organization, even to the point where some have come to believe that re-organization could, overnight, produce the new millenium—even with the same buildings, the same books, the same pupils, the same parents and the same teachers. No doubt this was a process that it was necessary to go through, as evidence of intent and purpose, but now that we have achieved the revolution—apart from minor circular skirmishes—let us recognize that we have done little more than prepare the ground for real advancement. If teacher attitude and teacher expectation are so important, ought we not to be making a frontal attack on this? I have argued previously that in the 1970s the in-service training of teachers is a much more important matter than the initial training of teachers. This is an argument that can be justified solely from the pace of educational change: change in methods, in curricula and in examinations, all unforeseen and unconsidered during the initial training courses of the vast majority of our present teaching force. Add to this these recent research demonstrations of the effect of teacher attitude, and the argument becomes unassailable. And yet there is little sign that this is recognized by central or local government. The Foundation's report on in-service training (Cane, 1969) and the more comprehensive Department of Education and Science survey for which Mr Townsend and I were responsible (Townsend, 1970), both show, first, that teachers want more in-service courses, and second, that what is provided is not a particularly good match with what is wanted by the teachers nor what is needed by the service. Far too many courses are subject-oriented, and there is a shortage of more general courses—courses for example applicable to a particular stage of education—and of course in such special fields as the education of immigrants, of socially disadvantaged pupils, etc. And these are just the courses which are likely to affect teacher attitude and teacher expectation. Subject-oriented courses are more likely either to ignore this factor, or to contribute to the hardening of existing stances. But perhaps the most serious and glaring deficiency in the existing programme is that of solid, comprehensive courses for head teachers, deputy heads and heads of departments. These are the key figures in the system, the ones whose own attitudes and opinions may significantly affect the attitudes and opinions of their staff-room colleagues. There has been some initiative, both by the Department of Education and Science, and a few universities, in providing courses focused on administration and management, but they cater for only a tiny fraction of these key personnel. We need many more: and we need an evaluation of the few existing courses to provide solid guidance on the desirable content, method and structure of future courses.

The second direction in which these research findings are of significance is their more general relevance to educational thought and practice. The effect of teacher attitude and teacher expectation on pupil achievement and pupil aspiration is one which operates either for the release or the inhibition of intellectual powers and potential. We are here in the area of *pupil motivation*, where we must recognize that changes in this can have profound effects on achievement and progress. For too long we have tended to confine our attention and interests to the level of cognitive ability of pupils, seeing this as the major determinant of educational success, and wasting a good deal of time and energy on such operationally-futile arguments as that about heredity and environment. We must come to grips with the certainty that different levels of motivation can make nonsense of predictions based on the results of cognitive tests, and that the pupil's energy and drive, his ambitions and aspirations, his response to difficulty and challenge, can be profoundly affected—for good or ill—by the teacher's underlying philosophy and beliefs. What is required in an educational programme designed to give full opportunity for all? First and foremost, a positive, encouraging and hopeful attitude on the part of the teacher. Second, teaching methods that capitalize on the particular relative strengths of individual pupils—which implies as full a knowledge as possible by the teacher of what these strengths are. So we need, third, an adequate and comprehensive system of educational guidance and record-keeping. Fourth, a content of teaching which is designed to stimulate and to feed the interests of the pupils: that is, a curriculum of relevance. And fifthly, an authority-structure and ethos within the school that permits and encourages individual development, that offers opportunities of responsibility to all pupils, and that makes it clear to teachers, parents and pupils alike that all individuals are equally valued in their own right.

Earlier in this talk I criticised the Plowden Committee for over-optimism in expecting too much of efforts to promote attitude-change among parents, yet here I am advocating in-service training to produce attitude-change among teachers. This is not necessarily inconsistent. The prospects of success with teachers are much higher than with parents, for two reasons. First, contacts with parents can only be fleeting and sporadic: for teachers we can arrange courses deliberately planned and of solid length—ranging, I suggest, from two weeks to at least one year, thus providing the necessary variety to cater for different needs. Second, we must recognize the advantage inherent in dealing with members of a profession, with its pride in competence, its reputation for service, and its continually-demonstrated concern for the welfare of its pupils. The teaching profession is undoubtedly a conservative one (as all professions tend to be), and this makes attitude-change the more difficult; but it is also true that it is one of the most conscientious, the most altruistic and the most devoted—and here-in lies my optimism.

The second point I made in listing the requirements for the school giving full opportunity for all was the necessity for teaching methods designed to capitalize on the particular strengths and weaknesses of individual pupils, which implied adequate diagnosis and guidance. It is clear, is it not, that the reaction of the education service so far has been concentrated almost entirely on the most obvious problem—that of providing tuition in English language for Asian pupils? Of course this is a necessity, and it clearly can be done in many different ways; some very much in tune with the educational philosophy I have been sketching; others which might appear to be rather counter-productive. But is this all that is necessary? Are we not taking a very superficial view of the situation? What about capitalizing on the immigrant pupil's own cultural background, something which adds to his own development and personality, and which also may enrich the life of the school itself? Some schools are doing excellent work in this area, but as yet they are few. But what interests one particularly is the possibility that out teaching methods may not offer adequate scope for the development of the particular pattern of abilities of immigrant children. Research has shown that different ethnic groups possess significant differences in these patterns. Dr Pidgeon reports in his book (op. cit.) that African pupils (in South African schools) made more than twice the gains of European pupils after coaching on non-verbal intelligence tests, while Indian pupils made no discernible gain. Lesser, Fifer and Clark, in the USA, gave tests of verbal ability, reasoning, number facility and space conceptualization to four ethnic groups: Chinese, Jewish, Negro and Puerto Rican. They found differences in level among the groups, but—and this is the important matter—they also found significant differences in *pattern*, with Chinese and Puerto Ricans highest on space and lowest on verbal, and Negroes and Jews showing the opposite tendency. Professor Philip Vernon has been engaged for the past few years on wide-ranging investigations among Jamaican, Indian, African and Eskimo children, and finds equally significant differences in the pattern of abilities among these diverse cultures. The reasons for these differences are still speculative, although it seems clear enough that they are more likely to derive from gross differences in way of life and child-rearing practices than in any innate differences in the central nervous system. But the implications for education are clear enough, calling for us to adapt method and content to allow the free play of existing aptitudes. Easier said than done, of course—and hence the need for much more research and development in this area. Our own project on the multi-racial school will, we hope, make some contribution here.[1] I might also mention here our small-scale study on the educational progress of immigrant children in which Miss Judith Haynes has demonstrated that individually administered tests of progress in learning can be more useful predictors of future educational achievement than tests of intelligence (Haynes, 1971).

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[1] Since this paper the NFER project on multiracial schools has produced two reports (Townsend, 1971; Townsend and Brittan, 1972).

In the immigrant field, we must not lose sight of the importance of parental attitude and education. On a visit to Malaysia some years ago, I was much impressed by the differences in schools and colleges between the three ethnic groups of Malays, Indians and Chinese. In terms of progress and achievement they tended to come out in that order, with the Chinese leading. It seemed to me to reflect very clearly the value put upon education by the families of these children of different races, together with the different attitudes towards work and play exhibited by them, rather than any differences in innate ability. I have no doubt that such attitude differences exist between, for example, the Pakistanis and the West Indians in this country, and this argues for a much more positive approach to the home/school relationship in immigrant areas.

I hope this audience will have noticed the number of researches I have mentioned that have been carried out by the Foundation or by members of its staff: Dr Pidgeon's work on expectation and pupil performance, the streaming research, Plowden, the French project, research on the problems of the multiracial school, the educational progress of immigrant children, the two surveys on in-service training. It is only reasonable that the Director should draw the attention of an audience such as this to the relevance of the Foundation's research programme to current and pressing problems, and so engage in a little gentle public relations work. But it also indicates, I hope, that our policy is a coherent one, in which the inter-relation of researches is a continuing concern. It should be noticed, however, that most (but not all) of the projects cited have been in the primary school field, and there seems to me some danger that the more intractable and difficult area of secondary education is receiving less attention than it might. One additional Foundation project might be cited to emphasize the need for more work with secondary schools, and that is the Plowden follow-up (Peaker, 1971). This looks again at the children of the Plowden National survey four years later, with the seven-year-olds now in their first year of secondary schooling, and the eleven-year-olds in their fourth year. One of the major results, highly relevant to this discussion, is that when we measure the educational attainments of these follow-up children, we find that 61 per cent of the variance now shown was determined at the primary stage, the secondary school contributing only a further four per cent. The need to increase the school effect at the secondary stage is abundantly clear, and the need for further research indisputable. But this must be done not by diverting resources from the pre-school and primary areas, but by an augmentation of total effort. Let us agree with Mrs Thatcher in calling for an emphasis on quality rather than quantity: to do this we need many more insights and much more knowledge. This means more research, strategically planned, competently undertaken, and adequately financed.

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EDUCATIONAL RESEARCH: A THREE-YEAR REVIEW (1968-70)

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THERE WERE considerable differences in the distribution of the articles amongst the age groups of the persons studied, the sizes of the samples, the methodologies of the designs, and the number contributed by individual British universities. There was evidence that editorial policy sought to correct some of these imbalances.

Introduction

The purpose of this selective survey is to review the 1968, 1969, and 1970 issues (Vols. 10.2 to 13.1 inclusive) of *Educational Research*, the official journal of the National Foundation for Educational Research. The review is intended to analyse some characteristics of: (1) the articles (their methodology, the age of the subjects, and the size of the samples); (2) the authors of the articles (the number they had contributed, their employing institutions, and their collaborators); and (3) the interrelations of these two categories. This survey is one of a series on British educational journals of the years 1968–70.

Some definitions and procedures in the survey are detailed at the end of this article.

Results

1. *Space in the journal*

Table 1: The use of space in 'Educational Research' (1968–70)

	VOLUME AND YEAR			
	10·2 10·3 11·1 (1968)	11·2 11·3 12·1 (1969)	12·2 12·3 13·1 (1970)	*Total*
Number of issues	3	3	3	9
Total pages	233	230	232	695
ARTICLES				
Number of Articles	24	40	37	101
Pages of Articles	179	223	223	625
Per cent Articles/Total pages	77	97	96	90
Range of length of Articles (in pages)	2–16	2–12	2–12	2–16
Median length of Articles (in pages)	5½	5	6	5½
Length advised by editor (in pages)				6–10
Number of authors per Article (mean)				1¼
RESEARCH NOTES AND ABSTRACTS				
Per cent Research Notes and Abstracts/Total pages	18	0	0	6
BOOK REVIEWS				
Per cent Book Reviews/Total pages	4	3	6	4
COST per 100 pages	9/9	12/6	13/9	(increase 40%)

2. *Articles*

The characteristics examined in the articles were considered under three headings, as follows:

Methodology

The comparative survey type of design was the most frequent whilst the experimental was the most infrequent. Types of design were equally spread over the six categories of contributing institutions in which the authors were employed. (British universities, foreign universities, agencies, schools, colleges and others). Theoretical articles had a comparatively high rate of numbers of pages in the journal.

Age

Proportionate to their numbers in the nation's population, the youngest and the oldest age groups were under-represented in the articles, the youngest particularly so in the contributions from colleges, and adults in those from the agencies. Adults were also sampled in noticeably smaller numbers, and had fewer pages per article devoted to them, than the other age groups.

Sampling

The most popular size of sample with the contributors was in the 100–250 range. There were no samples fewer than 40 and only a few in the thousands. On the whole, the size of the article's sample seemed associated with the number of pages of that article.

3. *The authors*

A comparison of British universities was made by the number of articles their staff had contributed to the journal in the three years. The University of London provided nine articles, Manchester and Bradford each six, and Birmingham four. Two articles each came from Bristol, Cambridge, Durham, Leicester, and Nottingham. There was one each from Aberdeen, Bath, Belfast, Cardiff, Edinburgh, Exeter, Oxford, Southampton, Surrey, and York. This made a total of nineteen contributing universities.

One author had contributed four articles, four had contributed three, and nine had contributed two. The remainder of the authors had contributed one. Characteristics common to many of the articles from the most frequent contributors was an interest in the one- to seven-year-olds, combined with the choice of experimental design.

Table 2: Characteristics common to the most frequent contributors

		CONTRIBUTORS	
		Frequent	*ALL*
1. *Age Group of subjects in years*			
	1–7	9	19
	8–11	1	21
	12–16	4	25
	17–18	1	10
	Adults	0	33
	Total	15	108
2. *Design*	Experimental	7	12
	Comparative Survey	5	71
	Theoretical	4	25
	Total	16	108

80 of the 101 articles were from single authors.

Discussion

Taking into account the natural vanity of writers, the median length of the articles was perhaps attained by an editorial administration more rigorous in practice than from policy, with a possible exception in the case of articles of theoretical review design.

This survey suggests that the present period of educational psychology seems to be one of observing, classifying and associating things as they have occurred rather than that of controlling one or two variables before they happened in order to test the prediction of the results. Financially, neither method is cheap (SSRC, 1971).

It might also be said, since half of the articles were concerned with the eight- to eighteen-year-olds, that the very young and the adults did not receive their fair share of attention. This is particularly unfortunate in view of the importance of the teacher variable, on the one hand, and the increasing awareness of the critical neo-natal and infant period, on the other.

Editorial policy cannot be the reason for these imbalances in design and age-groups however, because it will be recalled from the results that contributors, each with three or four articles to his name, had consistently shown an interest in the very young, and had used experimental more often than comparative survey designs. Publication of editorial policy on these particular points would no doubt be influential.

Reasons for the imbalance in age-groups may be that the youngest and adults are proportionately not numerous consumers of the education service and are therefore somewhat out of mind of the researcher. Secondly, there is the comparative intractability and elusiveness of such subjects. Colleges might take up the cause of the very young, and universities, especially the Open University, might look to the adults, disproving as they do the self-centred attitude epitomized in the old Scottish proverb: 'It is all toom (unprofitable) whatever you do for bairns and auld folk'.

That a minority, instead of a majority, of British universities were represented by articles is a state of affairs which may well be disadvantageous, both to the journal and to universities as a sector of public education. This survey is one in a series on British education journals and it may, or may not, be found from other journals that there are 'horses for courses', i.e. special relationships, academically desirable, between certain journals and certain sources of contributions.

Universities did not collaborate amongst themselves. This may be a characteristic of a centre of excellence.

Definitions

1. Agency: a non-teaching institution, e.g. NFER, Child Guidance, National Child Development Study, etc.

2. Comparative survey: after-the-event methodology (e.g. this article) and test constructions.

3. Experimental study: one which arranged experimental and control conditions prior to the event.

4. Theoretical study: an attempted synthesis of various researches, theories, or results.

5. Non-education sources: sources not specifically educational (e.g. principally psychology departments).

Procedures

1. Age categories: considerably influenced by the age-ranges of students in educational institutions.

2. Sample-size categories: adopted on a rule-of-thumb method by looking at the data's distribution.

3. Foreign universities: included Commonwealth.

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THE LANGUAGE OF THREE- TO FIVE-YEAR-OLDS IN PRE-SCHOOL EDUCATION

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A SAMPLE of spontaneous speech by unselected children engaged in normal nursery activities was examined for developmental features, and for the effect on language of different interpersonal situations. Using a unit of measurement based on the length of the major clause, the predicate unit, an analysis of the sample showed that length of clause was associated closely with increasing age but insignificantly with socio-economic status. A second measure, utterance length, was used to measure communication flow and this showed that certain adult-dominated conversational styles which reduced the child to a respondent position, markedly restricted the length of the child's utterances, while other types of adult/child communication facilitated fluent speech.

Although immature constructions appeared in a decreasing proportion of the predicate units of children from all backgrounds as the age of the children advanced, colloquial omission of subject and verb auxiliary persisted more strongly in the speech of working-class children and this might cause some initial difficulty in learning to read and write the extended form of standardized English text which would be alien to their normal speech in many of the commonest constructions.

This research arose out of an invitation to take part in the Educational Priority Areas Action Research project of the Social Science Research Council by providing an alternative language-intervention scheme for the improvement of the language of children between three and five years, as an experimental control for the American Peabody Language Development Kit in the London area. The introduction of the Peabody Kit was abandoned in London, but during the preparation of the Goldsmiths' intervention programme several important problems for investigation arose.

One of these was the lack of norms for language structure as opposed to vocabulary for children between three and five. The bulk of research has been done on children either younger or older. Two studies by Templin (1957) and Menyuk (1964, 1969) yielded some useful data but neither study illuminated the relation of the structure of the children's language to the context of activity or the inter-personal relations of those who were talking whether adult or child. What appeared to be needed was a functional analysis of the language of young children which might lead to an understanding of how language and context interact to produce differentiated speech, and what interpersonal situations were most fruitful in eliciting good communication. It was decided, therefore, to collect a sample of speech with notes on the concurrent activity of the children recorded and to analyse this to provide a better understanding of how children used speech and adapted it to the demands of the situational context.

Records were taken in three types of pre-school group; Nursery Schools, nursery classes in Infant Schools, and playgroups. So far as possible, the full range of nursery activities was covered and there were two conditions of recording:

(a) Children playing spontaneously.

(b) Children's activities with adult intervention.

No attempt was made to balance the sex or the social class of the children as this was a record of spontaneous interaction. One hundred and twenty-three children figured in the records of which 107 produced 20 remarks or more. Of these, 50 were boys and 57 girls. If the sample was grouped into upper and lower working class and upper and lower middle class, the classification used by Douglas in his longitudinal study (Douglas 1964), it fell into the following groups:

Table 1: Social compositions of the sample

GROUP	No.
Lower working class	36
Upper working class	42
Lower middle class	11
Upper middle class	18
Total	107

Children under three-and-a-half years of age are under-represented because the age intake policies of the Nursery Schools meant that children recorded in spring would in the main be autumn entrants who had come in at three. Five of the seven children under three were in playgroups.

The analysis of the data was undertaken to answer three main questions: What kind of competence did the children show already? In what direction was growth taking place? What contextual or interpersonal circumstances proproduced higher levels of skill? A quantitative measure of some kind was needed as a basis for more qualitative assessment, and this raised the problem of how to segment the data.

There are almost as many kinds of measure as there are language studies and each shows up a different facet of the child's competence, and relates it to different variables. The linguistic description constructed by Turner and Mohan of the Sociology Research Unit under Professor Bernstein for the computer analysis of their sample, used a multi-level frame based very largely on the grammar of Professor Halliday, and using sentence, clause and group as the main segments (Turner and Mohan, 1970). This sophisticated analysis seemed too complex for the purposes of this study, though parts of it have strongly influenced the structural analysis which is being undertaken currently. As it was desired to illuminate developmental sequence the work on early language acquisition in the USA, especially at Harvard, was of most interest.

This measured the children's progress in five stages based on mean length of utterance using pause interval to separate the chunks. The chunks were measured in morphemes, that is the grammatical markers such as *ing* (shopp*ing*) for progressive aspect, *s* for third person present verbs (she love*s*), possessives (teddy'*s*) and plurals (dog*s*) were counted separately. Very young children do not produce complex sentences in which clauses are imbedded or co-ordinated, so clause length seemed the best measure to preserve continuity of comparison with the research on younger children. As the main grammatical morphemes are, by and large, all present in the children's language by four it seemed more appropriate to measure the clauses in words. As language structure was our main concern, one word utterances and verbless abbreviations were excluded from this part of the analysis because their production, though rule-bound, was highly dependent on situation.

The first main unit of measurement decided on was, therefore, the main clause organized round a finite verb and measured in words. For want of a better term, this was called a Predicate Unit (PU).

The flow of communication however appeared to call for another type of measurement because segments of discourse could vary between single word responses and chunks made up of several remarks on one theme. It was therefore decided to use a second measure for continuous discourse. For this purpose, utterance length was chosen and defined to include everything the child said on one theme before a major pause or interruption by another speaker, but to exclude monologue.

Developmental comparisons

When the children's language was measured in predicate units, it showed a developmental pattern which is continuous with that observed in the three children in the Harvard study, and parallel to that noted by Templin (1957). The language the three children studied at Harvard was mapped in five stages corresponding to mean length of utterance from 1·75 morphemes (the first two-word utterances) to a mean morpheme length of 4·00, which one child attained at just over two and the others at three-and-a-half, with an upper boundary of 13 morphemes. The difference in the measures used, i.e. the exclusion of verbless utterances and the use of words rather than morphemes preclude strict comparison, but the trend is the same.

Table 2: Length of predicate unit by age measured in words

Age Group in Years and Months	No.	Mean Length of Predicate Unit	Templin Sample
2:6 – 2:11	7	4·2	4·1
3:0 – 3:5	9	4·3	4·7
3:6 – 3:11	34	4·9	5·4
4:0 – 5:5	25	4·9	5·4
4:6 – 4:11	32	5·2	5·7

The developmental trend shown by the children in Mildred Templin's study is shown in parallel. The higher mean scores of these children are due to a difference in the measure employed; Templin used sentence length and not clause length and so her unit of measurement is lengthened by co-ordinated and subordinated clauses being counted together instead of separately. In spite of this there is an interesting coincidence in the rate of development shown. Both samples also show a plateau in development between the ages of three-and-a-half and four-and-a-half. This may of course be due to sampling effects, but it might be worth further investigation as plateaux in other areas of learning are known to be a feature of development. When the sample was divided by sex no differential trends appeared in the children of the sample, and the difference between the middle-class group and the working-class group amounted to 0·1 of a word, for the three-and-a-half-year-olds and four-and-a-half-year-olds only. This small and statistically insignificant difference may be due to the unit chosen which was designed to show up basic structural skills including the elaboration of the noun phrase and the verb phrase but which leaves out the co-ordination of these phrases into longer structures.

Communication flow measured by mean length of utterance

Two factors appeared important in affecting the child's flow of utterance. The first was the child's general disposition to communicate, which would be a combined function of his emotional set and the nature of communication within the family which taught him to speak. The second of these was the eliciting factors in the immediate communication situation, both social and cognitive. It is obvious from reading the transcripts collected that certain communication situations make for brevity of utterance. A situation in which the dynamic of the conversation is under the control of a person other than one whose utterances are being considered (especially when that other person is an adult who is trying to elicit a particular response), tends to have a marked effect on the communication style of the respondent child. It makes the remarks much briefer. Situations in which the dynamic of the conversation is shared or alternating produce much longer utterances, and also those in which the dynamic is exclusively that of the individual considered, as in narrative monologue. This effect is shown up by Table 3, in which the mean utterance length is shown with and without one-or two-word responses which stood on their own, unattached to further verbal elaboration.

Table 3: Mean length of utterance with and without abbreviated responses measured in words

Age Group in Years and Months	*M.L.U.*	*M.L.U. minus one and two word utterances*
Under 3:6	5·1	6·1
3:6 – 3:11	6·9	7·8
4:0 – 4:5	7·6	8·2
4:6 – 4:11	8·3	9·5

The major part of the one- or two-word utterances consists of yes/no answers and elliptical responses which presuppose the remark or question of the previous speaker. These are, therefore, skilled responses showing a cognitive grasp of the content and a linguistic grasp of the form of the previous utterance. *Yes* and *no* cannot be employed as answers to questions beginning with words such as *what*, *when*, *why*, *where*, *who* or *how*. The grammar of the question determines the grammar of the response (Ervin-Tripp, 1971). Similarly, it is not usual in ordinary conversation to echo the question in the reply. The redundant segment is presupposed from the previous question and omitted, e.g.:

Q. Have you booked the theatre tickets?
A. Yes, I have booked the theatre tickets.
(Usual response: Yes, or Yes I have.)

The abbreviated response shows skill in fitting in with the flow of discourse which depends on retention of both its form and its meaning and the construction of the appropriate reply. The question is: why do some children add to these abbreviated responses, while others do not? The influence of interpersonal and contextual features on the language of young children is now attracting the attention of research workers. Labov and Cazden in the USA have drawn attention to the fact that children's competence and fluency change strikingly in different social situations (Labov, 1970; Cazden, 1971). Classroom communication styles and their effects have been studied for older children (Barnes *et al.*, 1969).

The characterization of interpersonal situations is not easy, but the records of the pre-school sample other than monologue were assessed by two judges independently and fitted into four categories:

1. Child/Child Interaction.
2. Adult-initiated mutual discourse.
3. Child-initiated mutual discourse with an adult.
4. Adult-dominated discourse.

Adult-dominated discourse was characterized by a flow of questions directed at the child concerning the obvious aspects of the shared content, i.e. what names things had, what colour or shape they were—and not at what was informationally unique, the child's own opinions, plans or concerns. That is, they were structured by didactic considerations and designed to test the child's knowledge, not to ascertain his purposes. The degree of mutuality was based on general characteristics by one judge and on the relative amount of new material introduced by adult and child by the other. Agreement between the two judges reached 94·2 per cent.

In a straight comparison between adult/child discourse and child/child discourse, child/child discourse was marginally more productive, mean utterance length being 6·3 words against 6·1. But when the mean utterance length in the four situations was looked at, it showed that mutual conversation with an adult which could be initiated either by the child or by the adult but which concerned itself subsequently with the child's area of thinking and interest was the most productive.

Table 4: Mean length of utterance measured in words and certain discourse characteristics

TYPE OF DISCOURSE	*M.L.U.*
1. Child/Child	6·3
2. Adult-initiated, mutual	7·2
3. Child-initiated, mutual	7·9
4. Adult-dominated	2·5

The very low score of the adult-dominated discourse is due to the child adopting a respondent role and taking no initiative himself. This appears to be forced on him by the cross-questioning of the adult who is not genuinely seeking information about the content of the activity which is shared but information about the child's information. In normal conversation the exchange of information is not about the obvious but about what is unique, i.e. the personal views, opinions and plans of those concerned. The child knows that the adult knows the answers to the questions and is therefore testing not conversing, and this may lead to the minimal response in these situations.

Some grammatical features of the language used by children in the pre-school sample

So far, the length of language segments has been considered as one of the indices of developing skill, but the pattern of the segments and their degree of conformity with criteria of what constitutes well-formed English are also important, both from the developmental and the educational point of view. From a developmental angle, the degree to which the rules of morphology and syntax are internalized by the child to form the tacit basis of language performance indicates the degree of maturation of the skill. From an educational viewpoint, the ease with which the child can adapt to the received usages of English current in the educational system which introduces him to literacy may also depend on the degree of skill in elaborating alternative syntactical devices which he has acquired.

It has been said in the past that three- and four-year-old children have a tacit mastery of very many, if not most, of the rules of the language of their speech community. Recent studies, however, have begun to show that syntax is still being developed actively during the first years at school (Menyuk, 1969; Chomsky, 1969). Two questions arise about the structure of language in the pre-school age-group:

(a) In what ways does it still differ from standard adult usage, and to what extent does it still reflect the grammatical devices used by younger children?

(b) Which of the more complex linguistic forms are developing and what circumstances or activities appear to be associated with them?

The first of these questions poses a number of complex problems. To begin with, what constitutes an acceptable standard of usage or syntax now that written language is no longer considered as providing a 'correct' norm for spoken language? Clearly, the dialect and idiomatic forms a child adopts because they are in use in his family and neighbourhood must be distinguished from immaturity of syntax. For example, the use of *aint* for *isn't* and *hasn't* has several centuries of history behind it and seems quite prevalent in south London. Similarly, affirmative tagging: *My teddy likes this, he does*, also appears to be dialect. On the other hand use of *do* and *don't* for *does* and *doesn't*, and the use of *they* with its accusative *them* as a substitute for *these* and *those* could be either dialect or immaturity.

As one of the objects of the study was to ascertain how far the children's grasp of language would support their schooling, it was necessary to give some thought to the degree of correspondence their habitual speech had with the standardized English they would be asked to read and write, and after omitting dialect, divergences from this standardized textual form were noted under two heads, grammatical immaturity, and grammatical omission. Grammatical immaturity such as the use of the weak regular form of the past, e.g. *goed* for *went*, or *her* for *she* or the use of a singular verb with a clearly plural subject is easy to pick out. Grammatical omission, however, seems to shade rapidly from the clearly immature telegraphic form into normal conversational omission where the subject pronoun is left out because the subject is there in person, or when the auxiliary of the verb is omitted because the meaning is fairly plain without it, e.g. (*Have you*) *got the car keys*? (*Are you*) *going out tonight*? These forms would be common in adult speech, but in addition children produce omissions which would not be usual in adult conversation so there appears to be a concurrent developmental factor: for example:

Mat. (3 : 4)	(It) *is a train.*
Cli. (4 : 7)	(They) *can't go in the bag.*
Sus. (4 : 7)	(I) *gibbed her shoes.*
Mic. (3 : 8)	(You) *mustn't.* (You've) *gotta finish making the farm first.*

The developmental factor may also be shown by the fact that there are more than twice as many occurrences of these omissions in the speech of children under four years as there are in the speech of children over four years, and more than five times as many as in the speech of children over four years five months.

As might be expected, if grammatical immaturity and grammatical omission are taken together, there is a dimunition in their incidence in each successive age-group. Using the predicate unit as the base, the percentage containing non-standard forms in each age group was as follows:

Table 5: Non-standard grammatical forms in predicate units by social class

AGE-GROUP IN YEARS AND MONTHS	*% Children of L.S.E.S.*	*% Children of U.S.E.S.*	*Mean % all Children*
Under 3:6	16	16	16
3:6 – 3:11	11	9	10
4:0 – 4:5	11	8	10
4:6 – 4:11	6	3	5

So far as this sample goes, the difference between older and younger children is very much greater than the difference between children of differing social class, but the difference between children from upper and lower socio-economic status tends to enlarge towards the upper limit of the age-range under consideration. If grammatical immaturity is considered separately however, there is no overall social class difference, so the difference in performance is due to the greater degree of habitual colloquial omission in the speech of the working-class children.

When one considers the kind of non-standard performance which contributed to this result, by far the largest group, 69 per cent, is related to the omission or misconstruction of verb auxiliaries and words marking person or tense, and the omission of the pronoun indicating subject role.

Copular and auxiliary 'be' are inherently variable structures. The 'be' verb is a kind of dummy which is used to carry the markers of tense and aspect, and in many languages is either missing or optional. The variability in the use of 'be' in non-standard Negro dialect has been carefully studied by Labov and the highly structured rules which govern its use laid bare (Labov, 1969). In normal conversation the 'be' auxiliary is always contracted unless it is stressed, and the same applies to most other auxiliaries. Anyone can tell the difference in meaning conveyed by the stress in *I'm going to do it* and *I* am *going to do it.* The contracted and non-contracted forms are clearly not substitutes. In some dialects, and in the speech of children, what can be contracted can also be omitted. The auxiliaries *have* and *do* are developed later than *be*, and are also unstable in the language of the children in this sample.

In the examples given below both grammatical immaturity and grammatical omission are shown.

1. Omission of copular *be*. This is obviously a survival of the construction common with two-year-olds:

Mar. (4 : 5) *I (–) your cat.*
Paul (4 : 8) *You (–) not the mother.*
Dav. (3 : 5) *That (–) my tiger.*

2. Omission of auxiliary when inverted in questions, before verbs marked with *ing*, and before go + ing + infinitive:

Phil. (3 : 9) *(–) you still in there?*
Bri. (3 : 11) *My pig (–) picking his gate up.*
Ste. (4 : 0) *I (–) making a cup of tea.*
Jac. (4 : 0) *That's nice. You (–) gonna cut two, aint ye?*
Dia. (3 : 10) *They (–) going to eat their dinner when they wake up.*

3. Omission of auxiliary *has* or *have* before past participle, and before *got*:

Sar. (4 : 7) *The lorry (–) fallen over on the road.*
Mic. (4 : 11) *You (–) gotta stay in bed for nine years.*
Jan. (3 : 10) *I (–) got a special bucket.*

4. Omission of auxiliary *has* before *done*:

Jan. (4 : 0) *Look what that man (–) done.*

All the omissions show a reduction with age, so far as this sample is concerned. Their incidence seems to reach a sort of peak between three and three-and-a-half years, and so far as the middle-class children are concerned, there are relatively few by five years of age. One exception to this tendency to reduce with age in the sample is the persistence of the omission of *have* with both *got* in the possessing sense and *got* preceding an infinitive construction, especially in the speech of working-class children. It is obvious that the underlying sense, which is quite different in each case, is perfectly well understood, but the surface seems almost identical. The meaning of the sentences used by the children is usually quite clear, so these omissions are not linked with any cognitive difficulty, but are pure episodes in the development of the conventional rules of English usage. They would, however, if habitual, make the standard form of English seem unnatural and laborious to write, and slightly stilted to read.

Lack of concord in number between the subject and the predicate is another frequent immature form. It is frequent in cases where the subject for some reason comes after the predicate in order of utterance, as in any construction using *there* as dummy subject or where there is uncertainty on the numerical status of the subject. Some grammarians would regard the use of the singular copula after dummy *there* as normal in spoken English.

Sus. (4 : 10) *There's only two stones.*

Reb. (4 : 2) *Knock, Knock! Is any robbers here?*
Rob. (4 : 2) *It's lost, the knickers.*

Lack of concord is, however, most frequent in the case of *do*, or rather *don't* which is used instead of *doesn't*, and this is probably dialect rather like *ain't*.

Mic. (3 : 8) *Take them tights off her, she don't like them, do she?*

Do as an auxiliary and also as a full verb, is a frequent source of difficulty, but the compound form *undo* presents peculiar hazards.

Car. (3 : 8) *How can I do this undone?*
Mic. (4 : 11) *No, he wants it undonning.*

The use of the weak form of the past tense is a well-known feature of the language of young children and is regarded as an intelligent extrapolation of rules. Bevers has indicated that it may be preceded by the correct form which is based on the perceived example, it appears that one form of the verb is grasped, and then applied in all tenses, the correct inflection being acquired gradually (Bevers, 1968). The past participle with *en*, *taken* or *broken*, seems to develop late and most of the misplaced *ed* markers are on verbs which should have *en*. Sometimes tense errors are due to confusion in long constructions:

Mic. (4 : 10) *They said they'd come straight away and they rang the bell and hold up all the traffic.*

or the tag of a sentence is sometimes not in agreement:

Sue (3 : 9) *I was ill, I am.*

The incidence of non-standard forms which are developmental in origin appears to diminish quite rapidly during the fourth year. The ones that persist are those which have backing in adult colloquial usage. The difficulty they may cause in the educational situation, apart from attempts by teachers to correct what they, from the point of view of their own sub-dialect consider to be 'bad habits', is the fact that they are tied to spoken rather than written language. Unless the child has acquired a thorough acquaintance with the more extended form of written language, through being read to at home, his language expectations on which he must rely to decipher written text will tend to be disrupted by the presence of subjects and auxiliaries usually omitted in his spoken language and the writing out in uncontracted form of words which are usually contracted, thus disturbing not only his grasp of language but his understanding of the sense. In addition, the omissions obligatory for the cohesion of spoken discourse will have to be restored into 'complete sentences' in written work, and what would normally be taken for granted as a common context will have to be laboriously spelled out as though the receiver of the message was totally ignorant of it.

Developmental features of the language of pre-school children

The clustering of the non-standard forms round the verb phrase seems to indicate that it is here that a major part of the development of syntax is located in the age-group examined, and a more fine-grained examination of the sample is currently being concentrated on the development of the verb phrase with particular regard to its function. So far three main areas of growth appear. One is the growth in the use of stative verbs, i.e. verbs which refer to perception, feeling or cognition, such as *see*, *hear*, *like*, *wish*, *know*, *expect*, *suppose*. These show not only a developing cognitive background but also contribute to language complexity, because they frequently introduce a second clause. More marked still is the increase in complex auxiliary constructions, especially the use of modal auxiliaries such as *will*, *can*, *would*, *should*, *may*, *might* and *must*, together with *have to* and *going to*. *Will* and *can* are established at all ages and cover the area of intention (*will*, *shall*), and ability/inability and permissability/impermissability (*can*, *can't*). The hypothetical modals are used infrequently and only by the older children and those of obligation (*should*, *must*, *got to*, *have to*) are also unexpectedly infrequent. The cognitive background of these auxiliaries is extremely complex and involves the understanding of possibility and probability and the grasp of both natural regularities and social rules. Their use is growing fast, but is by no means fully developed in the oldest children. The third main area of growth is in the ability to structure complex sentences with imbedded and co-ordinated clauses. Only two per cent of the sentences of the youngest children show this ability but over 20 per cent of the predicate units produced by the older children are in complex sentences.

Conclusion

Many previous studies of children's language concentrate on the variable of social class; this study is, however, concerned with development and therefore with the age-variable. It is based on records of children talking spontaneously or conversing with adults in a nursery environment. Using a measure based on the length of major clauses, the predicate unit, an analysis of the sample indicated that six months' difference in age produced considerably more difference in skill than did differences in socio-economic background which were insignificant so far as the children recorded were concerned.

When the flow of communication was measured by using mean length of utterance an interpersonal relationship which was adapted to the child's own concerns produced longer language segments than one which was dominated by the didactic concern of the adult.

When the level of maturity of the children's language was examined by looking at grammatically incomplete or deviant forms it was found that children of all classes used some immature forms such as regularized plurals, regularized weak past tenses, and lack of concord between subject and verb, and that the auxiliary system, especially the use of *have* and *do* was unstable. These immature forms diminished with age, but in the case of grammatical omission there was a marked difference between the middle-class and the working-class group. These omissions mainly consisted of personal pronouns indicating the communication role of speakers who were present and whose specification was therefore redundant or omissions of auxiliaries such as the *be* auxiliary where the participle is already marked with *ing*, or the *have* auxiliary where the participle is already marked for past tense, or is an exceptional form such as *have got* which uses a past form for present meaning. These types of omission also diminished with age but persisted more strongly among the children of lower socio-economic status where normal colloquial omission of redundancies may not have been balanced by meeting the more extended usages of written English.

Children who are learning to read without having a prolonged introduction into the different conventions of written prose by being read to in their homes, may find the language which they are meant to read and write at school alien to their normal speech. Learning to read is heavily dependent on the development of expectancies based on meaning and the normal sequences of language. It may not be deficiencies in vocabulary so much as unexpected differences in structure in many common verb phrases which defeat the expectancy of the child who habitually uses a colloquial register of speech.

What may be needed here is not only a much more prolonged and pleasurable introduction to books, but a greater willingness to accept an initial teaching language—the child's own, until confidence in tackling the standardized written register is built up sufficiently to let the child switch from one to another with ease using whichever is appropriate without feeling that the normal means of communication used by his family, friends and neighbours are somehow inferior or wrong.

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OCCUPATIONAL CHOICE AND STUDENT VALUES

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THIS ARTICLE attempts to set out a way of measuring determination, the element capable of making students' 'occupational choice' a reality not just an ideal, by exploration of the part played by the value system in relation to occupational choice. An investigation was carried out with secondary school students using a differential values inventory where students stated both the nature of their intended occupation and the reason for their choice. An analysis of the correlation between value orientation in occupational choice and scores on the value inventory in terms of 'traditional' or 'emergent' value systems concerning morality, achievement, autonomy and time orientation revealed that there are differences between traditional—and emergent—oriented adolescents in values concerned with time and achievement in occupational choice. Thus there is some evidence of translation into practice of theoretically held values when choosing an occupation. Attention should perhaps be transferred to students' values rather than socio-economic status or ability when predicting or advising on careers.

Some of the educational and sociological studies that have made use of 'occupational choice' as a variable may be open to criticism on the ground that that concept is so complex that, unqualified, it has little meaning. There has been a growing awareness of a need to refine the phrase 'occupational choice', as the validity of using at face value students' statements of what they choose to do after leaving school is being effectively questioned. Cohen (1969), for example, has seen the desirability of differentiating between students' choice of an *ideal* job after leaving university, and their statement of their *probable* field of employment.

Useful as is this distinction, it would seem that a further refinement is needed if allowance is to be made for another aspect of vocational choice, namely *determination*. This is the element that is capable of making the ideal become a reality, and, therefore, of equating the *ideal* choice with the *expected* choice.

An approach by way of motivational study may enable some measure of determination to be made. Alternatively, if we theorize with Lewin (1952) and others that values 'determine which type of activity have a positive and which have a negative valence for an individual in a given situation' (p. 41), it may be useful to examine the part played by this psychological dimension in relation to occupational choice.

Exploration via values

This approach is not new. Rosenberg (1957), for example, suggested the existence of a relationship between an individual's value system and his choice of an occupation. Rosenberg delineated three distinctive value orientations: ('people-oriented', 'extrinsic-reward-oriented' and 'self-expression-oriented'), and he showed that the distribution of these orientations varied from one occupation to another.

A British study by Morton-Williams (1966) also led to the conclusion that value-orientations are related to occupational choices. The contribution of the values element can be seen, too, in such studies as that of Cohen (1969), who showed that when teachers and non-teachers were matched on social variables, the teachers were significantly more 'people-oriented' on the Rosenberg scale than were the non-teachers.

In a recent study by McSweeney (1971) into the nature and correlates of adolescent values, the null hypothesis was tested: That, with respect to motives associated with choice of occupation, there is no significant difference between traditional and emergent oriented adolescents.

A stratified sample of Queensland non-government secondary school students was used, and an adaptation of Prince's (1958) *Differential Values Inventory* was administered, as well as a Biographical Data Bank. Scores were obtained on the Values Inventory for total value orientation as well as for each of the four subscales, according to the Spindler-Getzels dichotomization of secular values as set out below.

The Spindler-Getzels Dichotomisation of Secular Values

Traditional	*Emergent*
1. **Puritan Morality** consisting of the marks of 'common decency', such as: thrift, self-denial, sexual restraint; commitment to unchanging moral or ethical standards.	1. **Moral Relativism** Absoluteness in right and wrong is not acceptable as a principle of conduct; the group sets the standard of morality; emphasis on shame, rather than guilt; lack of commitment to time-honoured standards; values are in a constant state of flux.
2. **Work-Success Ethic** which endorses the value of hard work as the key to success ('work is good'); everyone has an obligation to strive for success and to value achievement and self-improvement.	2. **Sociability** which entails getting along well with others. Affability and successful inter-personal relations are more important than hard work.
3. **Independence** (**The Autonomous Self**) The self is sacred and is of more consequence than the group. Self-activity and originality are sanctioned; self-determination and self perfection are the criteria of personal worth.	3. **Conformity** The antithesis of the autonomous self. Everything is relative to the group; self-goals must be subordinated to group-goals; compliance to group wishes and demands is to be sought after.
4. **Future-Time Orientation** The future is more important than the present or the past; present gratifications should be deferred in favour of the future rewards.	4. **Present-Time Orientation** Instead of looking to, and providing for the future, we should live for the 'here and now'. As the future cannot be predicted, a hedonistic outlook is sanctioned.

On the Biographical Data Blank the students stated not only the nature of the occupation that they intended to pursue, but also (and more importantly) the *reason* for their choice.

These occupational-choice-reasons (OCRs) were classified, by two raters working independently, as traditional (T), or emergent (E), or indeterminate (I) in the value-orientation that they revealed. Lack of agreement by the raters on the classification of a particular response was resolved by relegating that response to the I category of the T – I – E classification.

The T and E groups were then examined to see to what extent the value-orientation manifested in their OCRs resembled that which emerged from their score on the *Values Inventory*.

Results

Comparisons of the two groups, involving 897 students, are given in Table 1.

Table 1: Occupational-choice-reasons and value orientations

VALUE SCALE	OCR VALUE MANIFESTATIONS					
	Traditional (*T*) *N*=816		*Emergent* (*E*) *N*=81			
	X̄	S.D.	X̄	S.D.	t	p
Morality	3·99	0·47	3·95	0·54	0·82	ns
Time	3·30	0·52	3·17	0·62	2·15	<·05
Autonomy	3·60	0·51	3·55	0·57	0·46	ns
Achievement	3·32	0·43	3·18	0·47	2·89	<·01
Total	3·56	0·32	3·46	0·39	2·42	<·05

OCR-Ts scored significantly higher ($p < \cdot 05$) than OCR-Es on total traditional value orientation. This was a reflection of significant differences on the achievement ($p < \cdot 01$) and time dimensions ($p < 0 \cdot 5$). No significant differences existed on the morality and autonomy dimensions.

The null hypothesis was rejected. Differences do exist between traditional-oriented and emergent-oriented adolescents in values manifested in occupational choice. However, these differences are confined to time and achievement dimensions and do not extend to morality or autonomy.

Adolescents who are traditional-oriented on the *Values Inventory* tend to be so in the practical situation of choosing an occupation; emergent-oriented adolescents display emergent values in their occupational choices. There is evidence here of a translation into practice of theoretically-held values. This is manifested particularly in the time and achievement dimensions, and it may be speculated that these two dimensions contribute more than others towards the influencing of adolescents' choices of occupations.

Implications

The transfer of attention to the values concept may be more productive in predicting careers than the traditional attempts to do so by concentrating on socio-economic status or ability (e.g. Husen, 1968).

In any case, accurate information about the intended occupations of students is important not only for careers teachers and vocational guidance officers, but also for the students themselves. Bernstein (1966) is not alone in the suggestion that a pupil's involvement in the school is dependent on his perception of the extent to which that institution contributes towards his desired occupational goals.

As far as the practical classroom situation is concerned, a student who has a high occupational aspiration (that is, one who values the traditional work-success ethic), and who sees the function of the school as supportive of his value orientation, is more likely to perform well academically, to be co-operative with his teachers, and to be happy with his school experience.

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AN ANALYSIS OF SOME DIFFERENCES BETWEEN PRIMARY AND SECONDARY TEACHERS

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DATA ON 127 primary teachers and 95 secondary teachers, which included variables from extensive tests during their final year of training, from their college and pre-college careers, and finally from their own ratings of satisfaction and dissatisfaction with their current teaching posts was collected, together with ratings by their headteachers on various aspects of teaching ability. Analysis of the data suggests overall that this group of primary teachers tended to be less sensitive and more conventional in personality terms, of lower cognitive ability and to come from areas of denser population than the secondary teachers' group. The secondary teachers, by comparison, tended overall to be more sensitive yet more tolerant in personality terms, of higher cognitive ability, to hold more 'progressive' educational attitudes and to express higher degrees of satisfaction with teaching. Implications of the findings are discussed.

As teaching becomes more complex in both theory and practice it may well be that differences in the personality, cognitive, attitudinal and background characteristics of teachers will more closely match differences in teaching tasks. There has not been much systematic reportage in the literature of this topic.

Dale (1955, p. 12), in noting that 'success in teaching is in part a function of the school environment', continued, 'It is possible that a successful teacher of Sixth Form mathematics needs a different personality pattern from a successful teacher of junior history'. Similarly, Walters (1955, p. 30), while emphasizing that the teaching profession 'has room for many diverse gifts' and that 'some people find greater satisfaction and success in teaching some age-groups than others' asks specifically 'whether we can discern any qualities or attributes which characterize those whom we recognize as the best teachers of young children'.

Ryans' research (1960) did find some differences between groups of elementary and secondary teachers but it is arguable whether the findings of such American researches are applicable here because of the differences between the two systems. This present paper examines differences between groups of primary and secondary teachers in the English milieu and is part of a larger analysis concerned with the assessment of a mixed group of both primary and secondary teachers (Cortis, 1970).

Data collection

The subjects of this study were given extensive tests of intelligence, attitudes and personality in the final year of their college course. Together with biographical details and college grades, the variables obtained were subject to a factor analysis (Cortis, 1968).

At the end of their second year of teaching, information on the teachers was obtained by self-report questionnaires and headteacher ratings.[1]

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[1] The ratings were made on the basis of the 'critical incident technique' described by Stewart (1956) and the resultant categories obtained were treated as both continuous and dichotomous variables.

Significance tests between 'respondents' and 'non-respondents' on both this analysis and the earlier one revealed no differences in examination grades in educational theory and practical teaching. Thus, from the data available, the group was not unrepresentative of the whole population concerned in terms of examination performance whilst at the student stage. The final 'effective' response rate (a teacher and his headteacher both replying) was 79 per cent. The number of teachers on whom data was available totalled 222, 127 primary teachers and 95 secondary teachers.

In addition to 33 test, biographical and final examination variables, and the 12 teacher/headteacher variables, five demographic variables

Table 1: Common and separate factors obtained in two factor analyses of primary and secondary teachers respectively

COMMON TO ALL TEACHERS IN THE TWO SAMPLES	SPECIFIC TO PRIMARY TEACHERS' SAMPLE	SPECIFIC TO SECONDARY TEACHERS' SAMPLE
1 Teaching ability	1 Success in college examinations	1 Success in academic main subject examination
2 'Extroversion'	2 Residence in more densely populated area whilst pupils	2 Success in educational theory and practical teaching examinations
3 'Anxiety'	3 GCE 'O' level success	3 Satisfaction with present teaching post
4 Intelligence	4 Culture/Verbal Ability	4 'Sensitivity'
5 Membership of larger-sized schools whilst pupils	5 'Sociability'	5 'Self-Sufficiency'
	6 'Suspicious' and 'conventional' aspects of personality	6 'Radicalism'
	7 'Naturalistic' and 'radical' attitudes to education	7 'Naturalistic', 'radical' and 'tender-minded' attitudes to education

Table 2: Significant t-test comparisons between two samples of primary and secondary teachers

VARIABLES	PRIMARY TEACHERS (127) v. SECONDARY TEACHERS (95)
	Higher
1 Vocabulary test	Secondary
2 AH5 intelligence test	Secondary*
3 'Self-Sufficiency' personality factor	Secondary*
4 Backward writing ('Stress' personality test)	Primary
5 Number of GCE 'A' levels obtained	Secondary
6 Family size	Secondary
7 Intercensal increase of population by excess of births over deaths	Primary
8 Intercensal increase of population by immigration into an area	Secondary
9 Grade in academic main subject examination	Secondary*
10 Overall average grade in college examinations	Secondary*
11 Planning and organizational aspects of teaching	Secondary
12 Suitability of material and method aspects of teaching	Secondary*

(Asterisked at one per cent level: others five per cent level) relating to population and school factors in the teacher's home area at certain points in his pre-college career were calculated from National Census returns and from Education Authorities' Year Books. An abbreviated analysis appears here. but fuller details are available in the original report (Cortis, 1970).

Results

By means of the statistical technique of factor analysis it was possible to isolate a number of dimensions (called 'factors') to account for the relationships between the variables. These appear in Table 1.

t-test comparisons

These were made between the means of the two samples on all 50 experimental variables and those reaching the five per cent or one per cent levels of significance are reported in Table 2.

Primary Teachers

Amongst the primary teachers there is a positive relationship between college grades in practical teaching on all facets of the teacher's role as rated by the headteacher, and between college grades in educational theory and the following facets of the role: overall teaching ability, suitability of materials and methods and class management. There is, however, no clear relationship between educational theory grades and planning and organization, human relationships or pupils' involvement. There is a positive association between success in educational theory and 'extroverted' personality factors. This finding is somewhat at variance with Furneaux's view (1957) relating academic success to 'introversion', but he was concerned with university students exclusively, who may well differ from ex-students in the teaching field.

The primary teacher here is shown as coming from areas of generally denser population, having 'naturalistic' and 'radical' educational attitudes but not 'tender-minded' ones. 'Tough-minded' educational attitudes are a loading on another factor, 'suspicious'[1] and 'conventional' aspects of personality, together with the personality factors of 'naivety' and dissatisfaction. Naturally, the philosophical interpretation of these factors, and the appropriateness or otherwise of the factorial names they have been given by the test constructors, Cattell and Eber (1964), are open to debate. The personality pattern here is psychologically consistent, for the 'conventional' person, in terms of the trait descriptions, lives very much in the real world externalizing his thought, whilst the 'suspicious' person tends to be mistrusting and sceptical of idealistic motives in others.

'Naturalistic' attitudes to education are related positively to overall teaching ability but negatively to the methodological and organizational facets of the teacher's role. This negative association is not surprising for, as Oliver and Butcher (1962, p. 50) note, 'naturalism' regards the most valuable human characteristics as 'unstable products of evolving human life' and this trait is unlikely to align itself with a rating structure whose primary emphasis is on the attempt to provide 'stable' descriptions of teacher behaviour.

Somewhat surprisingly the personality factor of 'shyness' is related positively to class control but negatively to academic main subject success, the personality factor of 'conventionality' to staff relationships. 'Shyness' is not an attribute that would be readily associated with class control and it may be that primary teachers here are unable to face the 'wear and tear' which the opposite pole of the factor, 'unreservedness', demands. For this factor 'is a very important one in distinguishing suitability for those occupations demanding ability to face wear and tear in dealing with people and gruelling emotional situations' (Cattell and Eber, 1964, p. 14). Conversely, it might be equally advanced that 'shy' behaviour may conceal sympathy and understanding and these qualities may be very valuable in primary schools, particularly amongst younger children. 'Conventionality', which characterizes people who are concerned to do what everyone else does, is consistent with the staff relationships rating, and the primary teacher here appears to be what Riesman *et al.* (1955) term 'an other-directed person'. That is, he tends to conform to the perceived expectations of others.

Primary teachers who show less 'stress', in terms of higher scores on the objective personality tests, tend to have lower rated skills in the planning and organization roles, and in involving their pupils with appropriate materials. This complements earlier observations. The 'stress' test is virtually measuring the stable/unstable dimension, and the less 'stressful' (i.e. the more 'stable') are unlikely to be as worried as the more 'stressful' about fulfilling the functional aspects of the role. In general primary teachers are more resistant to 'stress', in test terms, but are less 'sensitive' than secondary teachers. GCE 'O' level success, a factor indicating the wide basic qualifications of primary teachers, has loadings on the personality factors of 'radicalism', 'insensitivity' and 'dissatisfaction'. The intelligence factor is also related to levels of dissatisfaction expressed.

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[1] The popular term for the factor revealed by the test is *suspiciousness* but the technical term is *protension*, signifying 'projection and inner tension'. As Cattell and Eber (1964, p. 16) state, 'there is no need to imply disorder, as "paranoid" would . . . indeed, there are some very positive performances associated with protension in creative fields, e.g. of religion and science'.

Satisfaction amongst the sample is related to 'introversion' and pupil membership of larger-sized schools, intensity of dissatisfaction with dominance and surgency (i.e. a happy-go-lucky disposition). As Langveld (1963, p. 409) says, 'those who are of a quiet, industrious, receptive and studious nature expect to find satisfaction in the profession . . . without doubt some of our best (teachers) come from this group'. The least-satisfied have higher scores on the vocabulary and culture tests, the moderately-satisfied are more 'extroverted' than the satisfied. Wiseman and Start (1965) note that cognitive ability is a negative loading on the satisfaction factor in their analysis of primary teachers and conclude that it 'suggests a disturbing dissatisfaction felt by the more intellectual members of primary school staffs' (p. 349).

Secondary Teachers

Amongst the secondary teachers there is a similar positive relationship between college grades in practical teaching on all facets of the teacher's role as obtains in the case of primary teachers. Secondary teachers have, however, higher ratings than primary teachers on the organizational facets of teaching, but this probably indicates that the rating scale is delineating those areas more 'accurately' for secondary teachers rather than indicating the superiority of one group over another. There is a positive relationship between the educational theory examination and the following facets of the teacher's role: overall teaching ability, planning and organization, parental relationships, suitability of materials and methods and pupils' involvement. There is no clear relationship between educational theory and child and staff relationships, class management and control. Success in the examination is associated with 'radical' and 'insecure' personality factors. This is more in line with Furneaux's finding (1957) than obtained in the case of primary teachers so far as 'insecurity' goes.

The personality factors which have associations with higher ratings for relationships with children are the 'naivety' and 'laxity' factors. Start (1968), in a small-scale investigation in the same geographical area as that from which this sample comes, found that one of the same factors, 'laxity', distinguished the 'better' secondary teacher from his average and below-average counterpart. With the present-day effervescence of youth it may well be that 'laxity' and 'naivety' enable a teacher to make good relationships with them, for as Warburton (1969, p. 119) says, speaking of the 'naivety' factor, such a (naive) person 'may get along well with people in a primitive heart-to-heart way'. The association of both factors is psychologically consistent and sensible, but perhaps mildly disquieting if viewed in value-judgement terms from the traditional viewpoint of the disciplinarian, who sees his function as imposing standards rather than interpreting them.

Specific satisfaction with teaching is a separate factor with loadings on the 'friendliness' and 'sensitivity' personality factors, lower social class membership and residence in smaller growth areas. In general the very satisfied are more 'unconventional' than the least satisfied and come from smaller families and smaller sized primary schools. The moderately satisfied are higher on cognitive ability than the least satisfied, but not as 'self-sufficient'. 'Sensitivity' is a separate factor, peculiar to secondary teachers and firmly related to satisfaction. Mayer (1961, p. 26) says that satisfaction amongst teachers comes from 'the opportunity to live a more decent and self-respecting life than that customarily found in the world outside the schools'. Eschewing the concept of sentimentality he notes, 'teachers by and large are *good* people, made good, very often, by their trade.' The personality factors here fit the picture well. The 'friendly' type 'tends to be good-natured, easy going, ready to co-operate and attentive to people' (Warburton, 1969, p. 115).

The lower social class membership is consistent too, for as Langveld (1963, p. 400) notes, 'the teacher may very well be a person who himself is moving upwards in a class society' of which only the lower classes will have real upward mobility, the higher classes by definition having reached their ceiling already. Intensity of dissatisfaction amongst these teachers is associated with 'dominance', 'suspicious' and 'insensitive' personality factors, whilst amongst primary teachers the associations are with 'dominance' and 'surgency'.

The educational attitudes factor here is loaded on all the 'progressive' aspects, namely 'naturalist', 'radical', and 'tender-minded' attitudes. The personality factor loading on educational attitudes is however in the direction of low 'conscientiousness' or, in psychoanalytic terms, of weak super-ego strength.

College professional success and academic main subject count as two separate factors. Academic main subject has some 'transfer' in terms of teaching skills, having relationships with the organizational facets of the rating scale, and, compared to primary teachers, a greater degree of residence in 'growth' areas. The relationship of the main subject to teaching is expectedly characteristic of secondary teachers, who in general spend some, if not all, of their time in teaching their main subject and competence ought to 'rub off' in the teaching situation, as in fact it does. In the case of college grades in practical teaching the 'conscientious' and 'sensitive' do less well and higher social class distinguishes the higher graded teachers here. The 'stressful' (in terms of lower objective personality test scores) do better in academic main subject and this is again as Furneaux (1967) postulates. Overall, secondary teachers are better at cognitive tests, college examinations and come from larger families than primary teachers.

Conclusions

In summary, the primary teacher here appears a more 'rigid', insensitive' type coming from a more densely populated area, with overtones of 'suspiciousness' and 'conventionality' distinguishing his behaviour. The secondary teacher, on the other hand, is more 'sensitive', more satisfied with his work and has more 'progressive' educational attitudes than his primary counterpart. He is less 'rigid', even inclined to 'laxity', and has more commitment to his academic main subject as a separate entity.

The findings are somewhat contrary to expectations, for the stereotype of the primary teacher may be said to be one of a mild, sensitive and trusting character and here he appears to be quite the reverse. The findings too are contrary to those of Ryans (1960) who in his wide survey of teacher characteristics noted that secondary teachers were more traditional in their educational viewpoints, while elementary (primary) teachers were more permissive.

While it would be tempting to conclude that it will be for future investigators to establish whether the findings of this investigation are characteristic of general teaching populations in this country or whether they are peculiar to the samples used here, there is a problem in advocating such a course: to obtain these types of follow-up variable needs a delicate personal approach to the subjects concerned. Hence such samples will hardly ever be purely random ones. On the other hand random samples, certainly more acceptable to 'pure' statisticians, are only likely to yield impersonal general variables. Wall (1968, p. 10) has suggested that in circumstances such as these, by no means uncommon in other types of educational research, the answer lies in the determination and estimation of sources of error, in the careful discussion of results and not in the avoidance of the possibility of error at the expense of reality'. Thus any replications of this investigation, while useful and necessary, are likely to be subject to many of the same constraints as have been outlined above.

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ENRICHMENT THERAPY

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PROGRAMMES for very gifted children at the Technion in Haifa were started in 1969. The basic principle was that the courses should be child-centred and try to counteract the 'negative-gifted-child-syndrome'. The main object was not so much to increase the children's knowledge as to improve their emotional balance and develop their capabilities. In addition to courses in computer programming, electronics, mathematics and other sciences, experiments were made with humanistically oriented courses. A few of the courses, like the Art Course, are reported in detail.

Introduction

The problems of the very gifted have been very well described and analysed (Bridges, 1969; Kellmer Pringle, 1970; Shields, 1968) but much less is known about possible ways of helping those children towards a full realization of their potential and a better integration into society. With those two aims in mind we started a programme of enrichment courses for very gifted children in the age group 11 to 13 at the Technion in Haifa.

Some (different) courses have also been organized in other cities in Israel, and the Ministry of Education has now officially taken on the problem.

My personal view is that the enrichment courses have to be considered as some form of therapy. I am not really interested in teaching our gifted children more facts, but in doing as much as possible for their intellectual development and emotional balance.

Enrichment courses have also been organized and reported upon by S. A. Bridges (op. cit.). The reader can compare methods and conclusions.

Origin of the programme

The starting point was a 'phone call from a psychiatrist friend, who wanted me to meet a boy about 12, Raz, doing research in mathematics. Raz was indeed working on some problems beyond the subject matter discussed in the classroom. There was nobody around him with whom he could discuss those—or other problems that interested him—and the sense of frustration this situation provoked was quite apparent. His parents were concerned about this, and also about his marked introversion—the boy never went out to play with other children of his own age, and preferred to spend his time reading. A colleague of mine (a mathematician) agreed to meet him once a week, and after about a month the parents called to tell me that now Raz was not only much happier, but went out and played soccer with his friends.

Soon after that I was approached by a group of parents of 'able misfits' (to use the term coined by M. L. Kellmer Pringle). It was impossible to supply enough tutors, so I organized in the summer of 1969 a course in computer programming for very gifted children, the first such course in Israel.

Diagnosis by parents

In most cases the children who participated in the programme were brought to our attention by their parents. This is a departure from usual practice for courses of this kind. Selection is usually left to headmasters, teachers or school-boards (Ferrandi, 1971), but possibly parents are more aware of the children's problems and attitudes than teachers. This does not mean that children were automatically accepted on their parents' advice. All children were individually tested and as a rule only those with an IQ of 140 or more were accepted. Parents knew this, and as a consequence only tried to register their children if there was a strong assumption that they would qualify. In more than 90 per cent of the cases, the parents were right.

This was not the case when we tried to have teachers select candidates for our courses. Many under-achievers were ignored and the 'good student' types preferred. This is due in part to the rigid Israeli educational system, where everything is state-controlled, the teaching methods are quite formal and the number of pupils in one form quite large. Schools do not record the IQs of their pupils—the large majority of the children have not been tested—so the only way left to teachers to select very gifted children is their own intuition.

The diagnosis-by-parents has its drawbacks, however. First of all it tends to increase artificially the proportion of emotionally disturbed children in the course, since their parents notice quickly that something should be done, and look for help wherever they can. Moreover, parents with a higher educational level are more aware of the problems of the 'able misfits', and therefore there is a tendency for a very high percentage of 'professional people' to be among the parents. This can be seen in Table 1, which gives a breakdown of the occupation of parents of the children who participated in our programme in 1970–1.

This is open to many interpretations, and it is perhaps not surprising that there were so many professors among the parents. Many factors work in their favour, whether heredity, milieu, greater awareness, or simply the fact that they knew more about the programme.

Table 1: Parental occupation of children in 1970–71 programme

No.	OCCUPATION
14	University Professors
8	Teachers
28	Liberal Professions (physicians, lawyers, etc.)
2	Business
18	Whitecollar workers
23	Skilled and semi-skilled workers
5	Unknown
98	*Total*

Table 2: Age of children participating

AGE IN YEARS	NO. OF CHILDREN
10	4
11	23
12	15
13	35
14	16
15	5
Total	98

Table 3: IQ of children participating

IQ	NO. OF CHILDREN
130–133	2
134–137	7
138–141	24
142–144	25
145–147	12
148 and over	28
Total	98

The 'parental approach' also made for more flexibility—in age as well as IQ—although the programme catered in principle for the ages 11 to 12 and IQs > 140. Tables 2 and 3, giving the distribution by age and IQ of the 24 girls and 74 boys we worked with in 1970–71, show however a rather large spread.

A child-centred view of gifted children

A case can easily be made for taking care of the gifted children 'in the best interest of the state' (or of society). This argument certainly helps when trying to get financial support from government sources. But the main motivation of our programme was resolutely child-centred: we merely wanted to them be happy, and to maximize the measure in which they realised their potentialities.

Specifically, the activities for gifted children were intended as (psychological and intellectual) therapy, directed at a lack of balance which manifests itself in the 'negative-gifted-child-syndrome'.

The main constituents of this syndrome are:

(1) A feeling of loneliness. A gifted child does not look at things in the same way as other children of the same age. His interests are often

quite different. This leads to negative reactions towards him, and, therefore, to isolation and loneliness. Sometimes this turns into

(2) A marked feeling of superiority. The child, having met only less intelligent people in the family as well as in the school becomes conceited and thinks of himself as the most intelligent person in the world. (Only to break down much later when confronted, as will inevitably happen, with somebody who is more intelligent than himself.)

(3) Under-achievement: in order to regain a place in his peer group the very gifted child will hide his intellectual qualities and stop learning—which will impair his future development. Or

(4) Alternatively, he will become lazy since he can 'make the grade'—even up to a PhD sometimes—without too much effort and will not acquire working habits or techniques. Which in turn provokes

(5) A skimming attitude. The interest of the child is attracted by new ideas and subjects all the time, and he does not go into one particular problem in real depth.

The main concern of the project was to try to counteract these attitudes.

Individual tutors would certainly be in some ways a satisfactory solution, but there simply are not enough qualified tutors.

Moreover, by arranging meetings between children, their social isolation was eased. They were given some feeling of belonging to a group and their tendency to think too much of themselves was lessened.

On the other hand, grouping the children in a special school would have emphasized their alienation from their peer group and fostered a sense of caste, which runs counter to the socialistic and egalitarian atmosphere prevalent in Israel. The enrichment courses were the resulting alternative.

The First Computer Course

The first course took place in the summer of 1969 and was attended by 13 children whose details can be seen in Table 4.

The language taught was Algol, and great care was taken to sustain the interest of the children by staying close to the computer. The children learned to use flexowriters, and enthusiastically wrote their programs and sometimes ran them themselves on the computer (causing some havoc at the Computer Centre).

Table 4: Details of participants in first course

	SEX	AGE	IQ	GRADE
1	F	14	149	B
2	M	12	140	A
3	M	11	148	A
4	M	12	153	A
5	M	12	153	B
6	M	14	152	B
7	M	15	134	B
8	M	10	144	C
9	M	13	136	C
10	M	9½	144	D
11	M	10	133	D
12	M	12	131	D
13	M	12	125	D

The children met on campus for twenty two-hour periods and could visit the Computer Centre practically at will. The usual Algol course for first year Technion students was used, but the exercises were changed and depended mostly on (simple) arithmetic.

As can be seen in Table 4, there is some relationship between IQ and success in this course. The failure of the 9½-year-old with IQ 144 seems to indicate that we were mistaken in taking on such a young child for this course.

Looking at the way the children behaved during the lessons it was quite obvious that apart from their intellectual gifts they remained children, and thought nothing of playing 'battleships' in small groups while the instructor explained some principles of programming. This did not prevent them from raising their hands to discuss some fine points of Algol—without interrupting their play. This real 'time-sharing' type of behaviour is in fact a characteristic of the very gifted. It required much patience on the instructor's part, and points to one of the difficulties when arranging courses for gifted children: finding appropriate instructors who are kind, patient, and not afraid of dealing with children who are more intelligent than they are and have quicker minds. It proved possible to teach children of different ages together, but only when the difference did not exceed two years. Children aged 12 to 14 intermixed quickly but younger ones or older ones behaved in a disorderly fashion and interfered with the regular running of the course.

At the end of the course the children showed less interest. It looked as if they were more attracted by the abstract principles involved than by tedious technical applications.

The enrichment courses in 1969–70.

The summer experience was an encouraging one, whereupon we tried to provide more courses during the next school year. The following courses were offered: Computer programming, Graph-theory, Physics, Chemical Engineering, Electronics.

The main idea of the course in Chemical Engineering was to try to explain to groups of eight to nine children what kind of research is done at the Faculty of Chemical Engineering. The 22 children who expressed interest in the subject were divided into three sub-groups. Selected graduate students explained their own projects to each small sub-group, covering the background of the problem as well as the ways of attacking it, and the use of the equipment. In most cases the children spent half of the time studying and operating the typical measuring instruments used.

Among the projects studied were:

Title	*Measuring Instrument*
Packed bed	Chromatograph F.I.D.
Scale deposition	Titration
Heat transfer through films	Temperature measure instruments
Alkylation of Benzene	Chromatograph F.I.D.
Condensation and Evaporation	Rotameter and Manometer
Wakes of Drops	Spectrophotometer
Size of drops in mixed media	Dropsize measure instrument
Characterization of Polyethylene	G.P.C.

It is of course extremely difficult to evaluate the results of such a course. Table 5 gives what could be called a 'conventional evaluation', based on reports turned in by the children. On the other hand, from personal knowledge of the children involved, it appears that some very good pupils did not feel like writing reports.

The Electronics course was given to an all-male group of nine children aged 11 to 12. Communication systems, satellites, electromagnetic waves and the oscilloscope were studied. Two test-paper questions follow:

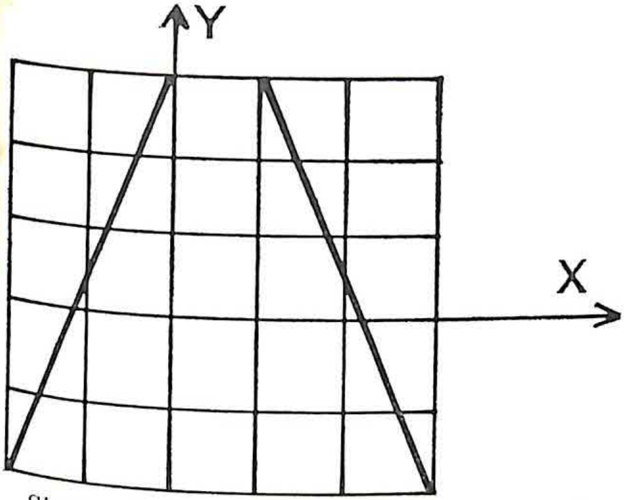
Question 2: Give five examples of wave-motion with details about wave-lengths,

Table 5: Evaluation of results of course in Chemical Engineering

	Grade	Number of Reports	Absences	Age	IQ	Sex
1	A	2	1	14	143	M
2	B	3	1	13	147	M
3	F	0	1	13	140	M
4	B	3	1	13	147	M
5	A	2	4	13	150	M
6	B	3	1	15	149	F
7	F	0	2	13	145	M
8	C	1	2	13	147	M
9	C	3	2	11	150	M
10	B	2	2	12	138	F
11	B	1	2	14	151	M
12	B	1	3	12	143	F
13	A	2	–	12	153	M
14	A	3	2	13	136	M
15	C	3	–	13	152	M
16	C	1	–	14	156	M
17	C	3	–	12	156	M
18	B	1	4	14	150	M
19	C	2	–	12	154	M
20	B	2	1	15	141	M
21	A	2	–	14	144	M
22	F	0	4	13	144	M

amplitudes and velocity.

Question 4: How would you instruct an oscilloscope if you wish the following design to appear on the screen?



Since most children in our group expressed a strong interest in mathematics, we tried to find a subject which would have the following qualifications:

(a) not be taught in school in general;
(b) be of a sufficiently abstract level to give a correct idea of what mathematics is like;
(c) depend on a minimum of previous knowledge.

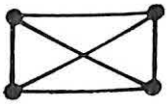
We chose graph-theory, but were not as satisfied with the results as we hoped. It appeared quite rapidly that no real progress can be made without a basic knowledge of algebra. Which goes to show that any programme of courses for gifted children that has some mathematical ambitions should start with an accelerated programme in basic mathematics.

In order to illustrate the way in which graph-theory was taught, some typical test-questions follow:

(1) What is the maximal number of edges in a graph with 11 vertices if there are no triangles?

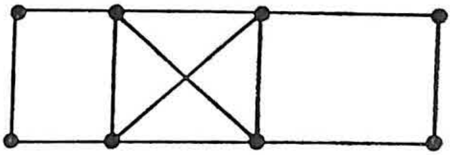
(2) Draw a planar graph that cannot be coloured with three colours or less.

(3) Is the following graph planar?



(4) Find two different graphs G_1, G_2, such that $L(G_1)=L(G_2)$.

(5) Find a walk through the following graph, if at all possible.



More diversification

It appeared from talks with parents and children that in 1969–70 we attained one of our goals, namely to relieve some of the inner psychological tension of the very gifted children.

On the other hand, we did not feel that we succeeded in stimulating their creative abilities quite enough.

An attempt to involve the children even more was made in 1970–71, courses ranging this time from Russian and Art to Metallurgy. The general framework remained the same, both the background and the selection procedure. The number of children increased to about 200.

The following courses were offered: Two- and Three-Dimensional Design; Metallurgy; Combinatorics; Graph-Theory; Physics; Electronics; Russian; Computer Programming.

The experience gained in the preceding year served to reshape some of the courses. In electronics, for instance, we tried to achieve more this time; some familiarity with elementary electronic systems and practical work in an electronic laboratory, using the main conventional tools.

In theoretical work the main difficulty was the insufficient mathematical knowledge of the children. This made it necessary to dwell on general and popular aspects of electronics, and did not permit a study of any of the subjects thoroughly. Laboratory work had its own problems: the children look upon it as play. We should, obviously, devise a learn-as-you-play-in-the-laboratory teaching method.

The course in metallurgy was given in laboratories at the Institute of Metals. Sixteen children took part in the course. Practical work was done using the electronic microscope. Some of the subjects (review of plastic materials, problems of corrosion) were suggested by the pupils themselves.

The origin of the course in Russian was the wish to go towards less scientific disciplines, avoiding the need for a basic knowledge of algebra, while at the same time retaining some of the aspects of the Computer-course. (After all, Algol is a language.) The basis of the course was the usual audio-visual course in Russian taught at the Technion.

The audio-visual course consists of 25 different episodes and is planned for 132 teaching-hours, i.e. 33 four-hour episodes. The course turned out to be a success and was very much liked by the children. The gifted children group mastered 12 of the episodes in 36 teaching-hours, i.e. 12 three-hour meetings. This corresponds roughly to one-half of the time needed by the usual Technion students.

Russian was a completely foreign language for each of the children in the group (none of them has a slavic background). There were, of course, individual variations in the rate of acquisition of new words. Two among the eight required some additional practice at home. All the children found out quite instinctively what the many possibilities of a language laboratory are, and preferred this way of learning a new language to any other one. They were especially attracted by the individualization of the learning process. The pupils showed interests not only in the language proper, but also in the cultural background. Let me add that we were lucky to have an extremely able teacher for this course.

The course in two- and three-dimensional design

This was undoubtedly the most interesting course. Extracts from the report submitted by the instructor:

The aims of the course were: (a) to explore two- and three-dimensional forms; (b) to develop flexibility of expression in various media; (c) to show relation of form to subject. A balance was sought between abstract forms, and their application to concrete ideas. Realistic expression was not discouraged, but was judged by the same criteria of form, composition and spacial relationship, as were abstract works.

The disciplines of work were imposed by the materials and by the aims of the exercise (e.g. paper sculpture that had to stand by its own construction). Teacher guidance was directed a helping the practical aims of the student, helping him to analyse lack of success, and through discussion underlining the wide potential for application of design in different physical situations. The age of 12 to 13 is thought to be a 'bad age' for art. The child has abandoned his individual form of personal expression which he used in earlier childhood, and there follows a time-lag between observation of reality in the light of new knowledge, and mastery of expression of reality in accepted visual forms. In this group abstract work was on a much higher level than realistic work.

Exercises where choice was a factor, such as the collage of coloured paper, and the wood assemblages, were easier than exercises where students had to create everything themselves. (I infer this by the comments of satisfaction made by the students.) Decisions were easier as to what was necessary in a composition, even when the desired form or colour was not to be found amongst the material available.

All students enjoyed working in three-dimensional materials, wood, plaster and clay, but the girls were rather dubious in their approach to wire-netting. The exercise in wood-carving was difficult technically, especially for the physically smaller children, but even the smallest showed great perseverance. There was one failure due to impatience. The students were uniformly quick in understanding, but varied in ability to express ideas visually. Most students worked quickly and enthusiastically. Periods of concentration varied from child to child and from session to session.

A very positive aspect of this course was the informal atmosphere of the studio, in which relationships between students and instructors and students among themselves, developed in friendliness and understanding. The smallne of the group encouraged free discussion an criticism, not only of actual work, but also of ide that arose by association; for example, ecolog engineering achievements, ancient history, reli ion and art, theatre, etc.

Some of the exercises:

1. Using coloured paper from previous sessions and cut or torn coloured magazines, the students made collage compositions. Students could use either images or abstract shapes.
2. At the last session students were asked to bring interesting stones. This they did, and were first asked to note down in colour and in words, the colours which they found in the stones of their choice. They were then asked to use these colours in a composition suggesting natural rock formation or any other natural shape. During this session there was a short talk about colours.
3. Students were given a large sheet of paper and were told to crumple it, and then open it but not smooth it out, the resulting creases and high points were used to create landscapes using pencil and pastels and mud.
4. Using wooden stands, boards and furniture of the studio, the students built little rooms or play areas; they discussed and criticized the results.

Notes about some of the children:

Ori

At the beginning he seemed to be the least talented of the group, but made great progress towards the end. Left-handed. He loved cars and introduced them at every opportunity. He had greater success in assembling shapes, both two- and three-dimensionally. In the wood-carving exercise he had trouble seeing the different faces of the block as being connected, and tried working on opposite faces only. He also found results too slow. His best work was the large painting in colour, in co-operation with Ami. He was very bright and open in discussing work and deas. Rather easily distracted by other people's activities.

Rachel

Very talented, strong and lively designs, and erseverence in work. Her collage was very maginative. She was sufficiently developed to be able to accept more formal disciplines of study. lthough her work was very good, she was clined to dismiss it as not being serious. She ight have benefitted from stiffer competition, at is from students a little more developed than erself.

Beni

Beni was a serious student who left after nine sessions because he felt the course was of no use to him. He had trouble thinking of abstract forms, and felt that art should be used to express reality, preferably natural beauty. He appeared to have expected a course in the rudiments of draughtmanship, and under the circumstances he gave the course a fair try.

Ami

A student with great possibilities. One got the impression that the studio was too small for him, that he would have enjoyed actually moving earth with a bulldozer, and getting down right away to building. Creative but restless, he worked quickly with concentration, but having conveyed his ideas sufficiently to be read, he was eager to get on to the next project. He had very decided ideas, and an immense satisfaction in working in clay and plaster.

Orith

Capable of lovely work, but temperamental. She had instinctive control of composition and structure, and used colour well. When she felt like it she could concentrate for long periods. (In this group the girls in general appeared to be more patient than the boys in bringing work to an advanced stage.) Orith seemed on occasion lazy, but perhaps she found decisions hard before starting to work, because when she had difficulties when work was in progress she was able to judge quite well what was wrong.

Yaron

One of the youngest in the group, he joined at the seventh meeting, and it took a few sessions before he was integrated. His outstanding ability to concentrate, and his extremely logical grasp of propositions brought him nearer to the level of the older children than I had anticipated. In attempting realistic work his imagery was weak, but as he experimented with increasing freedom in abstract work he became increasingly pleased and confident. His poster in exercise 20 was a step forward in visual clarity, without his abandoning his logical principles. He and Doron produced the best large painting of the group, which was remarkable for the way that they converted faults into advantages. Altogether a very satisfactory student with a rare quality of tenacity.

Evaluation and conclusions

Both parents and teachers noticed, in the main, a psychological improvement: less tension, better interpersonal relationships with teachers and other children alike. There were of course some exceptions, and we have not found the right way yet to make the children less conceited (they still have a pretty high opinion of themselves, and being chosen for special courses does not necessarily help).

By feeding their hunger for knowledge and bringing them together with other children endowed with the same intellectual capacities, the course did seem to induce a better emotional balance. This shows that by a special course for gifted children just one afternoon a week, we can alleviate their problems, but much remains to be done before these problems can actually be solved.

It is easy to make organizational recommendations, which would improve our courses, such as teaching in small groups of fifteen children or less or using as instructors only experienced teachers, having encyclopaedic knowledge and an infinite amount of patience. Needless to say, this is somewhat unrealistic.

But this is only one aspect of the problem. After the experience of the teacher-centred courses and the courses in Art or Russian, we felt that it was not enough to teach a class which was in essence exactly like one at school, except that the median level was much higher. Teaching methods should take note of both the alertness and quick-mindedness of our students, but also try to remedy the tendency they have to jump from one idea or subject to another. This relatively short attention-span, which, somewhat paradoxically, goes together with intense concentration powers, should be turned into an asset. In this respect the Art course was a very satisfying one. The studio situation permitted the tapping of the creative potential of the children and developing it, and the full involvement of the students in their work was achieved here. The language course, due to its individual aspects, also succeeded well, beyond expectation.

The computer course could probably be improved by switching over to the 'studio-method', i.e. meet for longer periods, say 4–5 hours, with a smaller group of children. In this way, programs would be written and run through the computer on the same day, thus avoiding negative reactions due to delay in debugging.

Another alternative would be to try to broaden the interests of the children by giving them courses in the Humanities. There are two different snags here. First of all, it is very difficult to find willing instructors. Past experience revealed a lack of instructors in Creative Writing and none at all in History or Geography. On the other hand, it would be futile to ignore the wishes and preferences of the children themselves, who are mostly interested in and attracted by sciences, as: mathematics, computer programming, physics, etc.

With this in mind, a 'Physics Laboratory' course was organized (in the summer of 1971), in which the children essentially performed experiments designed for first- and second-year students at the Technion. The main difficulty in devising such a course was the basic ignorance in elementary mathematics (trigonometry, for instance) of 13 year-olds. The necessary techniques can be taught, but this amounts to taking on subjects pertaining to the regular school material, only much earlier. This runs counter to our guidelines.

We plan to experiment with different teaching methods and try to find new ones, specifically appropriate for very gifted children, at the new Centre for Research and Care of Gifted Children which is being set up at the Technion. We also enlarged the battery of tests each of our children passes before being admitted (we now have about 250 children) and plan to have follow-up studies made.

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HEADTEACHERS' EXPECTATIONS AND THEIR PUPILS' SELF-CONCEPTS

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THE INFLUENCE of teachers upon pupil performance has been acknowledged in other studies as setting in motion a 'self-fulfilling prophecy'. But this informal segregation of children into good and bad academic prospects is in part determined by the headteacher's beliefs about the pupils' potential achievement during and after their school lives. By setting different levels of expectation throughout the school the headteacher may impose upon certain sets of children a diminished self-concept. To a significant extent, therefore, the headteacher predetermines the child's developing image of himself not only as a pupil but as a person.

Introduction

The purpose of this study was to find out whether any correlation could be identified between the headteacher's informal assessment of pupils and the pupils' self-image; and to discover whether the head's expectations of pupil behaviour and performance had any influence upon their developing concept of their own academic achievement.

In order to test for the first relationship a seven-point questionnaire was given to two headteachers and to all their final-year pupils. The language in the pupils' questionnaire was slightly simplified and certain individual questions were also explained verbally by the researcher.

The schools in this survey were both secondary modern schools—one for boys, the other for girls—approximately 200 yards from each other in a South Wales town. The area is depressed by very high unemployment and the traditional occupation which still features largely in the surrounding district is coal-mining.

The school population

The two schools were similar in most respects: both schools took the 40 per cent of eleven-plus failures in the catchment area; both schools were built during the first decade of this century so that buildings and facilities were highly comparable. The number of pupils in both schools was 350. The boys' school was streamed in A, B and C forms; the girls' school was also streamed, each class being given the initial of the form teacher's surname. In the girls' school, however, the fifth-year girls were in unstreamed classes.

Both teachers were nearing the retirement age and would not be continuing in their positions when the new comprehensive school came into being. Both had been headteachers at their respective schools for very nearly the same length of time (about seven years).

The school regime

As a member of the staff in both schools, working two-and-a-half days a week in each, I was able to propose a number of hypotheses, based on personal observation of the attitude of the two headteachers towards the administration of school affairs, their relationship with the staff and their approach to maintaining discipline within the school. At the girls' school all the pupils wore school uniform. Neat appearance was emphasized as important. The girls filed silently into the hall for morning assembly and were instructed by the headmistress from their first day in school to give precedence to staff on the stairs and in the corridors and to address the teachers as

'Mr', 'Mrs', or 'Miss'. At each assembly the girls greeted the head and her staff in chorus.

In the boys' school, although the pupils came from an identical catchment area and from similar—in some cases the same—mainly working-class homes, the wearing of school uniform was by no means universal. Even though it was a school rule that boys not wearing school uniform would be debarred from outside visits, this threat had little effect upon increasing the number of school uniforms in evidence nor was it, in fact, implemented.

In contrast to the subdued atmosphere at the girls' morning assembly, the same function in the boys' school was a casual affair in which teachers frequently walked among the boys who were seated—as were the girls—on the floor of the hall/gym. This lack of ceremony and the more spontaneous arrangement of such daily features as time-tabling, use of rooms, commencement of lessons typified the administrative regime in the boys' school. By way of contrast, the girls' school was characterized by the codes of punctuality and orderliness.

Communications

A similar contrast was observed in the way in which the two headteachers communicated with the pupils. In the girls' school the distinction between the status of head and that of the girls was maintained by a formal style of address, the headmistress favouring what may be termed a 'professional' mode of speech whereas the headmaster tended to speak to the boys, even as a total school population, in their own vernacular.

From these observations outlined above two assumptions were made:

1. It seemed apparent from the official communications made in the morning assemblies by the headteachers that in the case of the boys' school the pupils were regarded as predictable products of their home background and environment. Consequently it was hypothesized that expectations about their academic achievement and subsequent job prospects would not be rated highly by the headteacher and that this low expectation would be reflected in the pupils' self-image in relation to life chances, i.e. success in gaining and maintaining a regular or prestigious job, or involvement in further education courses.

2. Conversely, it was considered likely that the routine of prize-giving, of house meetings, of merit marks for good work and tidiness, the ovation given to school teams in assemblies, all of which were evident in the girls' school and absent from the boys' school would result in a more enhanced self-concept among the girls.

In order to test these hypotheses seven questions were given to the 61 fourth-form boys, to the 65 fourth-form girls and to the two headteachers.

Headteachers' responses

Overall, the two sets of responses suggested more negative expectations on the part of the headmaster. All the questions called for considered opinions rather than factual replies although it is likely that the heads knew that most of their pupils came from what would be generally accepted as working-class homes. Only one question—'Are the majority of children in your school well-behaved?'—left room for a distinction between expectation and actuality. Does the headmaster's response of 'fairly well-behaved', for instance, express a standard with which he is satisfied or dissatisfied? In general, it may be safe to assume that experienced teachers get from the majority of pupils the standard of behaviour which they expect.

Main agreement between the headteachers lay in acknowledging that most of their pupils were below-average in ability and came from a working-class background. The variations in response which supported the observed attitudes towards the children were found in the answers to three questions. Whereas the headmistress conceived of her pupils as 'very well-behaved' with only very few debarred from a grammar school place by the eleven plus examination, and that most had 'a few out-of-school interests', the headmaster thought that the boys were only 'fairly well-behaved' and had 'very few out-of-school interests'. He was convinced that no pupil in his school was a potential grammar school pupil. Similarly, the headmistress considered 'about half' of her pupils would take on a responsible job at some time after leaving school whereas the headmaster thought 'very few' of his boys would do so.

Both headteachers rated 'reliability' and 'conscientiousness' as the two most important attributes in a pupil. The headmistress placed more emphasis on what may be described as conformity to corporate morale, i.e. obeying school rules and being neatly dressed. The headmaster was more prone to regard the boys in an individual way, stressing 'good intellect' and 'imagination' as relatively important and caring comparatively little for the rigorous observance of school rules or for neat appearance.

This difference in emphasis on the ranked attributes was borne out by informal statements made to the researcher and to the pupils by the headteachers. The head of the girls' school claimed that her prior objective was to teach the girls to behave courteously and with respect for others. The boys' headteacher was primarily concerned with impressing upon his pupils the need to stay out of trouble. Movement to and from classes was not carried out in the more regimented manner applied in the girls' school. In organizational terms the leadership pattern in the girls' school tended towards an authoritarian regime; the structure in the boys' school approached *laissez faire*.

Inter-school responses

Analysis of inter-school responses shows evidence of a difference in positive self-concept between the boys and the girls (see Table 1).

There was a high degree of agreement about the respective levels of intelligence. Eighty-four per cent of the boys thought they were 'fairly bright or clever' and 86 per cent of the girls thought that they came within this category. In this respect the children saw their ability in a more favourable light than either headteacher. No boys thought they were *very* bright but six per cent of the girls thought that they or their peers were. No girls considered themselves or other girls in the class 'dull, not clever at all' whereas seven per cent of the boys recorded this answer. Overall, 16 per cent of the boys conceived of themselves as either 'not very bright' or 'dull' and only eight per cent of the girls thought they were in these below-average categories.

Answers to Question 2 showed a slight tendency among the boys to perceive themselves as having undergone a fair pre-secondary test; the balance of response among the girls indicated that fewer than half thought that the eleven-plus exam was 'fair'. These responses reflect fairly faithfully the headteachers' opinions about their pupils' potential attainment.

Answers given to Question 3 quite clearly correspond to the standard of external discipline exerted on the children by the headteachers and the staff. The headteachers differed in their expectations of pupil behaviour, as noted above, and also in their opinions about actual behaviour. Twenty per cent of the boys thought they were 'badly behaved' but only one per cent of the girls thought so. The responses to this question show that the pupils had a more diminished evaluation of their standard of behaviour than their headteachers. This may suggest an awareness by the children that the formalized and ritual situations in which they mainly meet and interact with the headteacher and staff reveal a level of pupil deference quite alien to their 'real' self-concept.

Caution must be shown in interpreting the response to Question 4 on interests out of school. On the one hand, when comparing the headteachers' opinions with the pupils' answers it may seem that the boys in particular were exaggerating the number of their out-of-school activities. On the other hand, the headteachers were making inferences based on their limited contact with the children. We must therefore assume that the pupils themselves are the ones who know whether or not they have few or many interests out of school.

Accepting the pupils' responses as more accurate it would appear that both headteachers underestimated the degree to which pupils commit themselves to pastimes. A more serious inference from answers to Question 4 is that the headteachers possibly assumed that the level of interest and energy devoted by the pupils to school work and activities was typical of the children at all times and not just in school. No recognition may have been made of what may be a chameleon effect in which the child adapts his observable attitudes and actions to his surroundings. This underestimation by the headteachers may point to the possibility that many children put on a special persona when they enter the school premises which does not do full justice to themselves.

Question 5 was intended as a control question to judge whether the children were being realistic in assessing themselves. As percentages of the total samples the girls' responses tallied exactly with the boys'. They divided themselves into 89 per cent and 11 per cent respectively for the working- and middle-classes. These classifications were explained before the testing began by giving examples of jobs: working class meant miners, factory/machine workers, labourers; middle class suggested office workers, teachers. Any pupil in doubt about the social grouping of his father's job was invited to ask into which of the two groups it fell.

Table 1: Pupils' responses

	GIRLS				BOYS			
	Raw score			*Total*	*Raw score*			*Total*
	4M	*4S*	*4W*	%	*4A*	*4B*	*4C*	%
Total no. in each class:	21	22	22		21	20	20	
Questions								
1. Do you think that most boys/girls in this class are:								
(a) very bright or clever	0	2	2	6	0	0	0	0
(b) fairly bright or clever	21	19	16	86	21	15	15	84
(c) not very bright or clever	0	1	4	8	0	3	3	9
(d) dull (not clever at all)	0	0	0	0	0	2	2	7
2. Do you think that the 11-plus exam. is:								
(a) a fair test	14	9	7	47	5	15	15	58
(b) an unfair test	6	13	15	53	16	4	5	42
		(1 no answer)				(1 no answer)		
3. Are most boys/girls in this school:								
(a) very well behaved	1	0	1	3	0	0	2	4
(b) quite well behaved	14	19	11	68	10	6	4	33
(c) not good or bad	4	3	10	27	10	5	11	43
(d) badly behaved	1	0	0	2	1	8	3	20
		(1 no answer)				(1 no answer)		
4. Do you have:								
(a) many interests out of school	8	5	4	26	3	11	7	36
(b) a few interests out of school	10	15	15	61½	11	8	8	47
(c) not many interests out of school	3	2	2	11	4	0	4	14
(d) no interests out of school	0	0	1	1½	0	1	1	3
						(3 no answers)		
5. Do most boys/girls in the school come from:								
(a) working-class homes*	19	20	18	89	13	13	16	89
(b) middle-class homes*	2	1	4	11	5	1	1	11
		(1 no answer)				(8 no answers)		
6. Will most boys/girls in the school get a good job after leaving school?								
(a) yes	10	17	9	55	2	5	5	20
(b) no	1	2	2	8	2	5	7	25
(c) don't know—not very likely	10	3	11	37	17	8	8	56
						(2 no answers)		
7. Which of these do you think is most important if you want to do well at school				*Rank order given*				
				Girls		*Boys*		
(a) to work hard				2		2		
(b) to be very brainy				6		5		
(c) to do what you are told				3		3		
(d) to be neat and tidy				4		4		
(e) to have imagination*				5		6		
(f) to work without being told to				1		1		

*these terms were explained

The precisely comparable results on this item also gave an accurate index of the predominating social group in the area and showed that the children in both schools were from the same socio-economic categories.

The predictive nature of Question 6 called upon an implicit evaluation by the pupils of their life chances, in this case the prospect of gaining a good job after leaving school. Because of their school's more positive reinforcement of academic and social progress it was expected that there would be a larger proportion of girls who would, rightly or wrongly, expect to do quite well for themselves after leaving school. One possible variable influencing expectations of a good job might have been differences in job opportunities between boys and girls. This possibility was not, however, substantiated by the local Youth Employment Office.

The fact that 56 per cent of boys and only 24 per cent of girls thought it not very likely that they would get a good job seems to verify the anticipated lower self-concept of the boys. It was possible that the boys were more aware of and sensitive to the difficulties of finding a job in the area but the sets of fourth-form leavers in both schools were allotted similar time-tables for careers lessons. Regarding the positive responses to this question 20 per cent of the boys as against 36 per cent of the girls believed that they would get a good job; 25 per cent of the boys and only five per cent of the girls thought they would not get reasonable employment after leaving school.

Answers to Question 7 showed that the girls gave the possible attributes the same rank order as their headteacher. The boys did not relate so closely to their head's opinion on the hierarchy of personal characteristics. There was agreement between the boys and the headmaster that reliability and conscientiousness were most important for success in school but 'amenability to school rules' (transliterated on the children's questionnaire as 'doing what you are told') and 'neat appearance' ('to be neat and tidy') were given greater precedence by the boys than by their headteacher who placed 'good intellect' and 'imagination' in higher positions.

Grouping reliability and conscientiousness as personal qualities, good intellect and imagination as personal talents, and amenability to school rules and neat appearance as collective dispositions, it becomes evident that while both headteachers rated personal qualities as most highly desirable in the school-children the girls' headteacher attached greater importance than the headmaster to socially conformist behaviour.

Conclusions

The limitations of this study are twofold:

(i) no sophisticated tests were made of the statistical significance of the data gathered;

(ii) the numbers of children and headteachers submitting answers to the questionnaire were relatively small.

However, the number of pupil respondents was in fact the total fourth-form population in each school. Moreover the schools were highly comparable in their location in the community, in the social background and eleven-plus performance of their intake, in the number of pupils in each, the experience of the headteachers, in the age of the school buildings and the facilities offered to the pupils.

This meant that in this study of a possible correlation between headteachers' expectations of pupil performance and behaviour and the pupils' own-self-concept the variables were minimized. Obviously mediating between the heads and the pupils are the teachers who will themselves influence the child's image of his or her worth as an individual. Nevertheless, the results of this present survey suggest that the headteachers, through continuous communication with the pupils and staff, not only serve to enhance or diminish the child's evaluation of himself but will also impart to the pupils in their charge a self-image which reflects the headteachers' highly subjective evaluation of the pupils both as 'clients' and also as human beings.

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THE EFFECT OF PROJECT WORK ON THE ATTITUDES TO SCIENCE HELD BY SIXTH-FORM PUPILS

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THIS PAPER reports an investigation[1] into attitudes held towards science by sixth-form pupils concerned in project work as part of the Nuffield 'A' Level course in Physical Science. The links between attitudes and attitude changes and project marks are explored, together with other factors that may affect these quantities. It is shown that attitudes have some effect in determining the outcome of the project and that, in a few cases the project affects the attitudes held by the pupil. In the great majority of pupils, however, the project has little effect in this area.

Some investigation into the effect of abilities is also included, together with relationships between attitudes and abilities.

Introduction

A project represents a departure from the normal methods of teaching and learning in that it allows a pupil a greater measure of control over an experimental situation than he would normally get. Projects are essentially pupil-directed. If such work is included as part of a science course there will be some interaction between the project and the rest of the course such as to affect the attitudes that the pupil holds towards science. Equally, previously held attitudes will probably affect the outcome of the project.

The investigation reported in this paper is primarily concerned with two aspects of this interaction:

How does project work affect the attitudes that pupils hold towards science?

In what ways is the project affected by the attitudes that pupils already hold?

The project work concerned is that which forms a small part of the Nuffield 'A' Level Physical Science course, and which is a requirement for the examination. Forty regions are set aside for the work and pupils are told that an investigation is needed in which the emphasis is put upon the design and evaluation of an experiment rather than a constructional exercise, although some apparatus may need to be made as part of the project. Joint projects are possible, although few of these seem to take place. Assessment is by school staff, moderated externally, and seeks to take account of the pupil's ability, knowledge, initiatives and perseverence, the help given to the pupil, the facilities available within the school and the quality of the project report. The resulting mark is capable of affecting the examination grade.

The sample

A sample of 30 schools was used, divided as follows:

18 in the *main sample*, taking Physical Science and involved in project work;

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[1] WILMUT, J. (1971). 'The effect of project work on pupils' attitudes to science', unpublished MEd thesis, University of Bath.

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6 in the *first control sample*, also taking Physical Science, but not yet doing project work;

6 in a *second control sample*, taking traditional 'A' Level Physics and Chemistry courses, at the same stage of the sixth form as the main sample, but not doing projects.

A summary of the samples is shown in Figure 1. Type and size are indicated, the numbers being those who gave complete information (that is, excluding losses due to absence, etc.).

The selection of schools for tests was made so as to conform approximately to the following criteria (holding good within each sample):

the division of pupils by sex should conform to the division for sixth-form physical sciences across the country;

the division of pupils by school type should conform to that between state and independent schools (the latter including direct grant schools) across the country;

the division of schools should conform to the distribution between the areas of the country selected for testing;

these latter were Greater London, South Eastern England, South Western England, West Midlands and East Midlands.

Each school was visited twice, the timing being chosen to coincide with the start and finish of project work in the main sample. The attitude questionnaire was given on both occasions and other information obtained from pupils and staff.

The Attitude Questionnaire

The questionnaire used was a 50-item Likert (summated ratings) scale (Oppenheim, 1969), which was a modified form of that devised by Selmes (1971). It consisted of statements about science and scientists about which pupils were asked to register their opinions on a five-point scale:

Strongly Agree, Agree, Don't Know, Disagree, Strongly Disagree.

Items both favourable and unfavourable to science were included and these fell into three broad groups (Diederich, 1967):

Items which attempted to discover the understanding that a pupil had of the ways of science or the 'scientific method';

Items which sought the extent of the pupils' sympathy with the ways in which science operates; and

Items, though not directly involving understanding of or sympathy with science had been shown to have some relationship with either or both these groups.

Examples of these three types are given below:

'We found that the theory did not fit the facts; and we were delighted; because this is how science advances.'

'The cold dispassionate scientist is a mythical creature.'

'A scientist must communicate his ideas to non-scientists.'

Several methods of validation were used for the questionnaire (some by Selmes and some by the writer) and all indicated a measure of validity, while consistent reliability coefficients (Garrett, 1958) in the region of 0·75–0·80 were obtained. The scoring method resulted in a minimum score of 50 and a maximum of 250.

Project marks

Project marks were obtained from the examiners and ranged between 10 and about 60 points. For examination purposes these were rounded to the range 10 to 50 but the fuller range was used in this investigation as it provided a better discrimination between the pupils who had the best marks.

Results

1. *Attitude Scores*

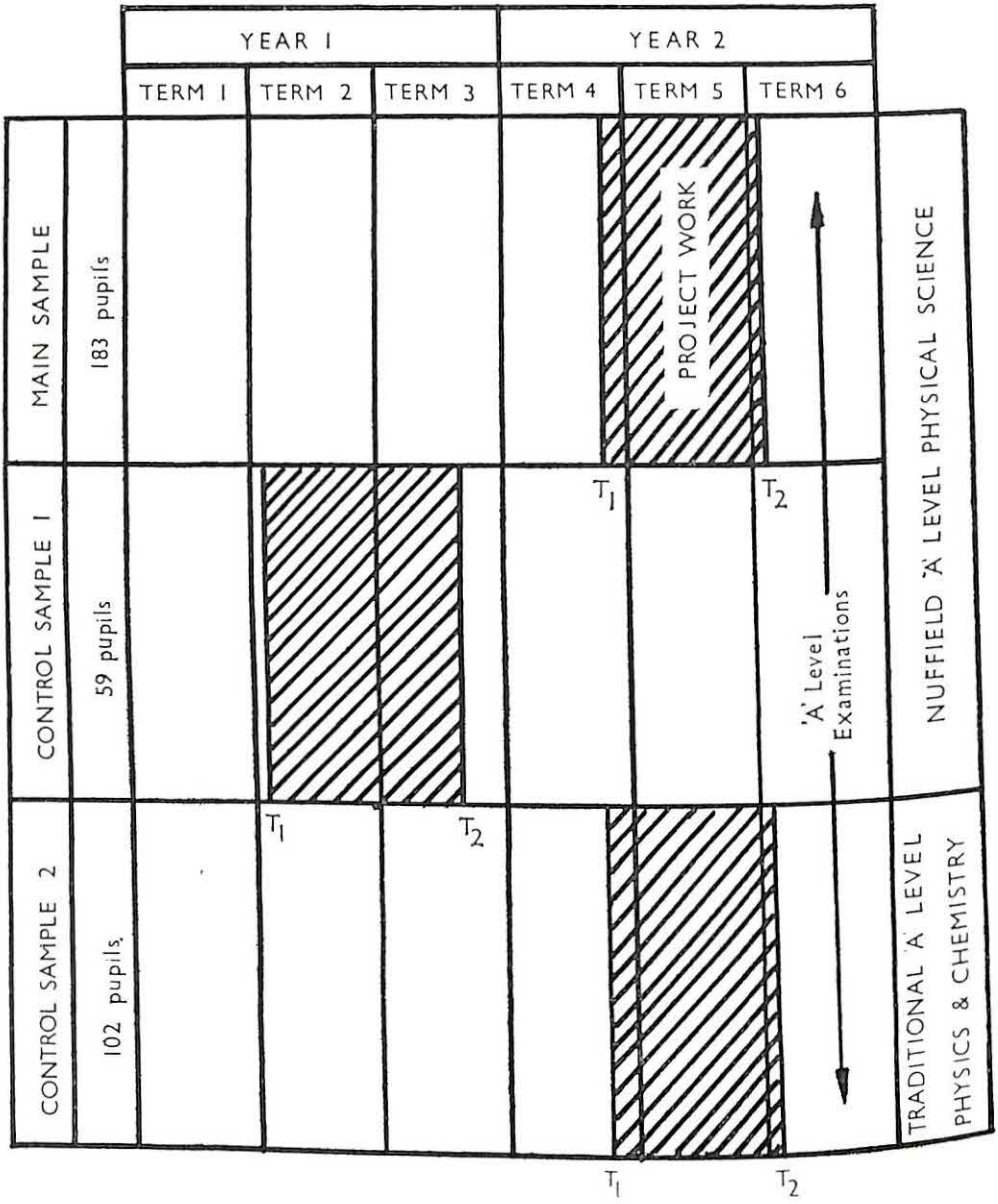
The mean attitude scores and their standard deviations are shown for each sample in Table 1.

Table 1: Mean attitude scores and S.D.'s

SAMPLE	MEAN SCORE		STANDARD DEVN.		SAMPLE SIZE
	First Test	*Second Test*	*First Test*	*Second Test*	
Main	184·5	184·6	14·9	18·7	183
Control 1	184·2	184·9	14·7	15·5	59
Control 2	184·3	185·2	15·6	17·1	102
All	184·4	185·8	15·1	17·8	344

There are no significant changes in mean score between the first and second tests for each sample. Using Bartlett's Test for Homogeneity of Variance

Figure 1: Positions of the Samples within the Sixth Form. Note that the exact starting and finishing times for project work varied slightly from school to school



T_1 First Attitude Test
T_2 Second Attitude Test

(Dayton, 1970) the standard deviations of the samples appear homogeneous ($\chi^2=3{\cdot}46$, $10\% < P < 30\%$) whereas for the second test the standard deviations of the samples appear non-homogeneous ($\chi^2=6{\cdot}06$, $2\% < P < 5\%$). This indicates that, in the main sample, there has been a 'spreading of the scores', and that, since all other factors which might have caused such a result have been controlled (as far as is possible) it can be stated with some certainty that project work has caused this effect. Since the mean scores of all the samples remain substantially the same it must also be concluded that the effect of project work is to raise some scores but lower others.

An examination of the mean scores for individual schools indicates that there were no significant differences for either the first or the second attitude tests ($F=1{\cdot}29$ and $F=1{\cdot}12$ respectively, d.f. = 29/314 in each case).

Some minor differences appeared between boys and girls but these were not consistent. It would be expected that this would be the case in view of the overall lack of systematic difference shown by Meyer (1970) for pupils following Nuffield schemes to 'O' Level.

2. *Project Marks*

The overall mean project mark was 31·4 (main sample only) and the standard deviation 10·1.

Two sets of correlation coefficients were calculated:

between project marks and initial attitude scores, and project marks and changes in attitude scores for individual pupils; and between the same factors but using school mean scores instead of individual scores in each case.

These coefficients are shown in Table 2.

Table 2: Correlations between attitude scores and project marks

CORRELATIONS BETWEEN:	*Coefficient (r) and sample size*	
Individual project marks and initial attitude scores	0·21 (1%)	172
Individual project marks and attitude score changes	0·08 (NS)	172
School mean project marks and mean initial attitude scores	0·58 (5%)	17
School mean project marks and mean attitude score changes	–0·21 (NS)	17

The sample sizes are reduced from those given in Figure 1, as project marks were not available from one school.

It would be reasonable to assume that the project would have some effect in determining attitude changes. In other words the more successful project (assuming that the method of assessment was a fair measure of success in the widest sense, and that the pupil felt that he had been fairly treated in the assessment) does not appear to be related to any specific change in attitude. Rather, the outcome of the project *is* to some extent determined by the initial attitude to science held by the pupil.

A further breakdown of attitude scores and project marks was conducted. When the attitude scores were inspected closely it appeared that a small number had increased and a similar small number decreased very significantly. The great majority had not changed significantly.

The 15 per cent greatest positive and 15 per cent greatest negative attitude score changes were selected and the project marks for these two groups extracted. The mean project marks for these groups were then compared and found to be significantly different [$t=7{\cdot}66$ (0·1 per cent)]. Thus, when the attitude score change is large the project mark is closely linked to this change and it can be supposed that the project has had the effect of raising or lowering attitude.

3. *Ability, Attitudes and Project Marks*

Two approximate measures were obtained at the time of the first attitude test:

(a) an 'ability' grade given by staff for each pupil;

(b) an 'achievement' grade devised from performance in science and mathematics 'O' Level subjects.

Each is correlated with attitude scores and project marks, and the coefficients are shown in Table 3.

Thus, in general, 'O' Level grades do not correlate with attitude scores while staff ability estimates do. But they both correlate with project results. Doubts must therefore be expressed concerning either the objectivity of the staff estimates or the project assessment. Nevertheless, there is a strong element of ability/achievement in determining success in project work; this would be expected.

Table 3: Correlations between attitude scores, project marks and ability and achievement grades

CORRELATION BETWEEN:	COEFFICIENTS
Achievement scores and initial attitude scores	
Main Sample	0·02 (NS)
Control Sample 1	0·05 (NS)
Control Sample 2	0·14 (NS)
Ability scores and initial attitude scores	
Main Sample	0·21 (1%)
Control Sample 1	0·46 (1%)
Control Sample 2	0·22 (5%)
Achievement scores and project marks (main sample)	0·31 (1%)
Ability scores and project marks (main sample)	0·44 (1%)

4. *Pupils with craft experience*

Project work might be expected to favour the pupil who has had extensive experience of craft or engineering work (subjects such as metalwork, woodwork, engineering drawing, etc.). Those who had taken such subjects to 'O' or CSE levels were compared with those who had not. In the case of the attitude scores or attitude score changes there were no significant differences but the following mean project marks were observed for the two groups:

For those who had taken craft subjects ($N=21$), 25·7.

For those who had not taken such subjects ($N=151$), 32·2.

This difference is significant at better than the one per cent level. An inspection of the examination performances for the groups revealed no real differences and it is thus unlikely that the difference in project marks can be solely accountable to ability.

Discussion

An underlying problem with work of this nature is the 'reliability' of the measures used. Two obvious problems arise.

In the first case there must always be the problem of determining the ability of the attitude scale to discriminate between pupils having similar views. The scale used has limitations in this direction (Edwards, 1957) and this is brought into focus by the very significant difference in results obtained for the connection between changes in attitude scores and project marks with the whole sample and then with the pupils having the largest attitude score changes creamed off and studied separately. In other words the pupils whose attitude scores changed little tended to obscure a result that existed for those whose attitudes changed by a larger amount. It is impossible to tell the extent to which this is due to the inability of the test to discriminate. On the other hand, where the test has been used to compare attitudes with other quantities the results are probably most reliable.

The second difficulty lies in the project assessment. For this work the method used by the project examiners was accepted and used; it would have been impossible to create and use an independent method. But the factors that have been used in the assessment are not necessarily related or the relationships are not known. Attitude is one of these factors, ability is another and factors such as perseverance and imagination may be related to these. It is hardly justifiable to accept this assessment as a sufficient condition for judging excellence in project work; its sole merit seems to be that it works.

Accepting these limitations the following main points have emerged:

(a) That the attitude of the pupil towards science is one factor determining the outcome of the project.

(b) That, in some cases (about 30 per cent of all pupils) the project has the effect of changing attitudes by a significant amount.

(c) That the attitudes that exist in a school class (indicated by the mean initial attitude score) correlate with the quality of the project work carried out in that school (indicated by the school mean project mark).

(d) That, having taken all other factors into account it seems probable that the project has the effect of spreading attitudes more widely about some mean; there is no significant change in the mean.

(e) Experience in craft work does not seem to assist a pupil in getting a better mark in a science project.

(f) Ability would seem to affect project mark, but staff assessments would seem to be suspect (Jackson and Lahaderne, 1967).

Conclusion

The weakness of any investigation into project work lies in the lack of knowledge of agreed objectives and of the interaction between a large number of factors that could affect its outcome. It would be illuminating to know, for instance, what relationships exist between ability (more reliably measured than in this investigation) and project success, between some factors of personality and project mark, and how the relationship that exists between teacher and pupil might affect the project. This latter could, in fact, be the vital link which determines the outcome of a project in that it bears upon the degree of open-endedness or pupil-direction which some consider essential for the project as compared with other types of laboratory work (Dowdeswell, 1969).

In general, however, so little is known about project work (which is very different in character from other approaches to the learning of science, however heuristically orientated) that one can only guess at its effectiveness. The present investigation produces the results that would have been expected: it would be surprising if project work were to improve all attitudes, whereas a pupil's initial attitude to his subject is more likely (with his ability) to determine the outcome of his project.

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THE ROLE OF MEMORIZATION TECHNIQUES IN FINALS EXAMINATION PREPARATION—A STUDY OF PSYCHOLOGY STUDENTS

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THIS PAPER reports on the results of a postal survey carried out basically to examine the nature and extent of usage of mnemonic techniques employed by Psychology students in preparing for finals examinations. Two hundred and five post-graduates of the Psychology Department at University College, Swansea, i.e. all students who had sat finals papers in Psychology between 1967 and 1971, were sent a questionnaire. The results, based on a response rate of 74 per cent, indicate that 53 per cent of students used mnemonics in examination preparation in order to retain points to be made in essays, 37 per cent repeatedly read material to be retained, 4 per cent claimed they made no attempt to memorize material as such, but rather arrived at an intrinsic understanding of the material. In terms of examination performance there are no significant differences between users and non-users of mnemonics. This finding does not, therefore, support the view that the use of mnemonics is beneficial to examination performance.

Introduction

That mnemonic techniques can aid retention has been known for a considerable time, and has had recent experimental support from various sources (e.g. Wood, 1967). Mnemonic techniques which are reported to be most frequently used in the learning of lists of unrelated words are the First Letter (F.L.) and the Descriptive Story (D.S.) techniques (Blick and Waite, 1971). The former (F.L. technique) involves arranging the first letters of 'to be remembered' words into a word. An elaboration of this technique, the First Letter Elaborated Into a Story Technique (F.L.E.I.S.T.) involves elaborating the first letters of 'to be remembered' words into words which make up a story, e.g. Richard Of York Gave Battle In Vain, for the colours of the rainbow. The descriptive story technique (D.S.) involves relating key words as vividly as possible by means of a linking story or some form of linking associations.

The use of mnemonic techniques as an aid to *studying* is in fact generally frowned upon by Educators, who, to quote Howe (1970), 'agree that the value of rote learning is very small'. Mnemonics of course function to facilitate rote learning. Howe (p. 93) goes on 'If something is worth learning there is almost always a meaningful way of learning it. And material learned in a meaningful fashion is not only more likely to be remembered, but its acquisition is more likely to contribute to the intellectual growth of the learner than if it had been acquired by rote'. However, whatever the merits or otherwise of the arguments for the use of mnemonics and whatever value placed on the use of rote learning by educators, it is useful to examine the extent and nature of the usage of mnemonics by students in high level examination preparation. This study reports on the responses to a questionnaire on mnemonic techniques of students who graduated from University College, Swansea between 1967 and 1971, having taken final papers in Psychology. An analysis of the relationship between the use of mnemonic techniques and examination performance is also reported.

Methodology

Subjects

Two hundred and five students had in fact graduated in the department between 1967 and 1971 and these students were all sent questionnaires. Thirteen questionnaires were returned by the Post Office stamped 'gone away', and 121 replies were received. A reminder was sent to those students who had not replied and a further 21 replies were forthcoming. The total number of responses represents 74 per cent of students contacted (one questionnaire was discarded because the information contained in it was inconsistent). Fifty-three were Arts and Science students taking only finals papers in Psychology. Twenty-eight were BSc Econ. students taking a majority of papers in Psychology, 47 were BSc Econ. students not taking Psychology as a major part of their degree, and 13 were General Degree students, taking Psychology as half of their degree.

Design

A questionnaire on the use of mnemonic techniques was sent to the post-graduate students described above. The questionnaire, after giving various examples of mnemonic techniques, required respondents to indicate, amongst other things, whether or not they memorized specific materials for topics, and if so how they did this; the extent (on a four-point scale, i.e. always, mostly, sometimes, rarely) to which they employed mnemonics when remembering points to be made in essays; the nature of mnemonics so used, and how they first heard of mnemonics. Those who did not use mnemonics were asked to state their reasons for not using them.

Results

Analysis of results was in terms of four broad categories: (1) The extent to which memorization of material is involved in examination preparation and the extent to which various techniques are employed to aid memorization (Tables 1, 2, 3); (2) The nature of the mnemonic techniques used (Table 4); (3) Students reasons for not using mnemonics and the attitude of students to their use; and (4) The relationship between the use or non-use of mnemonics and degree performance (Table 5).

Table 1: Preparation for examinations

	Memorized Material for Specific Topics Only *1*	Read without Memorizing Anything in Particular *2*	*1+2*	*Neither*
Single Honours (N=53)	14	1	36	2
BSc Econ. Majors (N=28)	4	2	22	0
BSc Econ. Minors (N=47)	16	2	28	1
General Degree (N=13)	3	0	9	1
Total (N=141)	37	5	95	4

Table 2: Mnemonics used in examination preparation to retain essay points

	Always	Mostly	Sometimes	Rarely	Not Used
Single Honours (N=53)	3	4	11	14	21
BSc Econ. Majors (N=28)	0	2	3	6	17
BSc Econ. Minors (N=47)	3	4	8	10	22
General Degree (N=13)	0	1	3	3	6
Total (N=141)	6	11	25	33	66

Table 3: Methods of memorization used by non-users of mnemonics

	REPEATED READING OF MATERIAL	REPEATED READING (ROTE LEARNING OF SPECIFIC WORDS OR POINTS)	INTRINSIC UNDERSTANDING	OTHER
Single Honours (N=21)	9	8	4	0
BSc Econ. Majors (N=17)	10	4	1	2
BSc Econ. Minors (N=22)	10	7	1	4
General Degree (N=6)	1	3	0	2
TOTAL (N=66)	30	22	6	8

Table 4: Types of mnemonic used[1]

	TECHNIQUE							
	* A	B	C	AB	BC	AC	ABC	Other
Single Honours	1	5	0	5	3	2	2	0
BSc Econ. Majors	0	2	0	1	2	0	0	0
BSc Econ. Minors	1	2	0	3	3	0	2	4
General Degree	1	0	1	1	1	0	0	0
TOTAL (N=42)	3	9	1	10	9	2	4	4

[1] Analysis confined to those who used mnemonics at least 'sometimes'.
*A = First Letter Elaborated Into a Sentence Technique.
B = First Letter technique.
C = Descriptive Story technique.

Table 5: The relationship of mnemonic use to examination performance[1, 2]

	DEGREE CLASS				
	1	2·1	2·2	3rd	Pass
Single Honours Users of Mnemonics	0	7	10	0	1
BSc Econ. Majors Users of Mnemonics	0	4	1	0	0
TOTAL	0	11	11	0	1
Single Honours Repeated Readers or Rote Learners	0	6	9	2	0
BSc Econ. Majors Repeated Readers or Rote Learners[3]	0	10	4	0	0
TOTAL	0	16	13	2	0

[1] Analysis confined to those who used mnemonics at least 'sometimes'.

[2] Four students are excluded from analysis as they used neither mnemonic nor repeated reading, but claimed that memorization took place as a result of intrinsic understanding. Two of the students received First Class and two II(1) degrees. Also excluded was one BSc Econ student who obtained a II(2).

[3] Two students are excluded from analysis as they gave insufficient information upon which to make a classification.

Discussion

These results indicate that for the great majority of students in this study, preparation for examination involved the memorization of specific material. All but seven students in the study indicated that their examination preparation involved this, and 37 students did not appear to use any other method (see Table 1). In order to assist in this task 30 per cent (N=17) of honours students used mnemonic techniques at least sometimes, and in one or two cases relied very heavily indeed on them. Those who did not use mnemonic techniques generally reported that they repeatedly read the 'to be remembered' material (N=52). Of these 22 claimed that they rote learned points which they wished to make on a topic. Only 4 students out of 53 single honours students claimed that they tried to gain an intrinsic understanding of material without trying to retain anything, specifically. Of these, two obtained first class degrees and two obtained II(1)s. Obviously, because of the small numbers involved little can be made of this fact. As can be seen from Table 1, however, by no means all of those who relied on mnemonic techniques performed badly in finals examinations, one example of a student who relied heavily on mnemonics and who obtained a II(1) degree is student X. He wrote on his questionnaire:

'Starting with notes, rearranging them into a coherent whole (lecture notes and notes from journals, etc.) till they satisfy my ideal answer to the exam. (essay) question that my imagination presupposes. Then comes a progressive reduction of the notes, which at the same time helps to impress the salient features of the topic upon one. After perhaps three or four reductions, only a group of single words is left, each of which is the starting place for a separate point, maybe several paragraphs long, which this key word elicits. Thus, for one essay there may be anything from 8 to 30 key words. A mnemonic is made up from the first letter of these 8 to 30 words. As two examples I've taken my mnemonics for the degree exam. in Individual and Abnormal Psychology (where a lot of researcher's names occur, which have to be remembered without omission, and of course what they did) and Developmental Psychology (for which less researcher's names cropped up, here more individual points are included). For the Individual Psychology course I have 15 mnemonics whose length varies from 15 to 31 letters, the total number of letters to be retained altogether is 323. For the Developmental Psychology, the mnemonic's length ranges from five to 21, there being 12 mnemonics altogether and in letters 152. Taking account of all that was learned in information theory, e.g. Kelly's 7±2, the 15, 12 mnemonics are split into two, and two key mnemonics are learned. The key mnemonics are constructed specially by the first word in each one of the 15, on two separate mnemonics, thus in the latter, the first word is made with this point in mind. Thus, once each individual mnemonic has been learned the key mnemonic is then learned, the key mnemonic thus provides the aid to the retention of all the other mnemonics. The words in the key mnemonic (six or eight) should each set off one of the whole string of other mnemonics —which can be easily tested before an exam. Thus, once in the examination room the first thing done is to write all the mnemonics down and then look at the questions. One hundred per cent retention of mnemonics is common and often 100 per cent retention of the points they relate to, occasionally some precise mnemonic or connection is lost, but it would be rare for retention in both cases to slip below 95 per cent. Thus, with all your essay notes intact, if your notes are reasonably good you can be reasonably sure of a goodish degree. The exam. questions are for the most part predictable beforehand and generally of a straightforward type. Thus, with your essay already formulated point by point it is a simple matter to write it down at high speed, with very little time-consuming thought required.'

Whether mnemonics work in general to improve the standard of degree a student is likely to get is by no means clear from this study, however. There were no differences in overall degree class obtained by those who used a mnemonic at least 'sometimes' and those for whom memorization involved repeated reading of material. In view of the experimental evidence that mnemonics facilitate retention this result is perhaps surprising, and certainly does not support the view that mnemonics are as beneficial for examination performance as some proponents claim (e.g. Buzan, 1971). There are, of course, various possible reasons why no differences in favour of mnemonic users were found in this study. Thus, university students are a highly selected population of individuals who, in order to get into university, have had to demonstrate their competence in examinations, no matter what memorization technique they use. Again, it may be that memorization plays a small part in examination performance as far as discriminating between individuals is concerned, in that a satisfactory minimal level of retention is usually attained no matter what system of memorization is used; the degree classification depending on how the information is utilized. In this respect, the memory aspect of examination performance might be regarded as analogous to handwriting, a necessary prerequisite of examination performance which has no appreciable effect on degree classification. If this is in fact the case, it would appear to be an important finding, since it negates the view that examinations are mere memory tests, and throws doubt on the value of any procedures such as 'open book' examinations aimed to minimize the importance of memory. The present results do not, of course, force this conclusion; there may be other explanations of the findings; perhaps, indeed, those who use mnemonics are essentially inferior students whose inferiority is disguised by the use of skilfull memory techniques; it may be that mnemonic techniques are not used efficiently by most students or that the extent of usage indicated by the term 'sometimes used' is not very great in relation to other memorization methods.

As far as the nature of mnemonics used are concerned, the First Letter technique (F.L.) appears to be the most popular although it is commonly used in conjunction with either the First Letter Elaborated Into a Story Technique (F.L.E.I.S.T.) or the Descriptive Story technique (D.S.) (see Table 4). It is not perhaps surprising that the peg system is not reported as being used in that this technique involves the use of imagery and clearly this is normally inappropriate to the retention of abstract material, although techniques in fact exist for overcoming this problem (see e.g. Furst, 1962).

As regards the reasons given for not using mnemonics, by far the largest reason was that it was found to be of limited or no use. In fact only three students had not heard of such techniques. Only two students gave as their only reason for non-use that such techniques reduced the status of studying, although 24 per cent gave this as one reason together with the point that they found it of limited use. Interestingly enough, a larger percentage of users (38 per cent) regarded mnemonics as reducing the status of studying and learning. There seems very little difference to this writer, between using mnemonics and repeated reading of material, as far as reducing the status of studying and learning is concerned.

The results of this study, then, leave no doubt that, for the great majority of students, preparation for examinations involves memorization of specific material for set topics. Indeed, given the present examination system, this is perhaps not surprising. If mnemonics can act as an aid to students' examination performance there seems little reason to discourage its use, and the major question to this writer seems to be, to what extent are they in fact useful? The fact that the results of the present study present no evidence of their efficacy as far as Psychology examination performance is concerned cannot be taken to be generally true without a far more thorough examination of the techniques in operation under optimal conditions. If they have no benefit it does raise the question of why so many students find it worthwhile to employ them.

Appendix I

The questionnaire on mnemonics involved questions on when respondents had first heard of mnemonics and when they had used them other than in University examinations, e.g. in GCE examinations. Because students in the study were postgraduates, it was thought likely that their memory of what they did in school examinations might be unreliable. It was therefore decided to administer a questionnaire to first-year undergraduate students. The students chosen were first-year undergraduate students at University College, Swansea, undertaking a first-year Psychology course. The questionnaire was administered to 79 students at the commencement of a lecture.

Results indicate that 47 per cent of students used mnemonic techniques in GCE examinations. Whilst such techniques were used in a variety of subjects, e.g. Maths 'O' Level (N=6), History 'O' (N=6) and 'A' Level (N=2), Geography (N=3) Physics and Chemistry (N=3), by far the largest reported usage was in Biology (N=12) where 12 out of 21 individuals taking biology used mnemonics. Knowledge of mnemonic techniques is sometimes gained very early on, with eight students reporting that they used them in Primary Schools. Ten students named 'teacher' as the source of knowledge of mnemonics.

and a further 25 stated 'in school' as a source of knowledge. Presumably a proportion of these 25 students also gained their information on the use of mnemonics from teachers, which would appear to indicate that for some teachers at least, the value of mnemonic techniques outweighs any objection which might be raised.

Psychology students are not, of course, representative of the student population, and the student population is not representative of the school population, so that firm conclusions of the use of mnemonics in schools cannot be readily established from this investigation. On the other hand, a pilot investigation of first-year Italian, and first-year Physics students reveals that six out of 19 of the former and 17 out of 33 of the latter use mnemonic techniques in University. At least the possibilities involved in the usage of mnemonic techniques in school subjects bears further examination.

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A STUDY OF STREAMING AT A GRAMMAR SCHOOL

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MATCHED GROUPS of pupils from consecutive intakes of a recently opened boys' grammar school were compared as to academic performance at GCE 'O' level and as to attitude to school, while the school, which began by being rigidly streamed, was gradually being unstreamed. The main conclusion has been that significantly more boys have done well at GCE 'O' level (gaining five or more passes) as a result of less streaming but slightly at the expense of the brightest pupils, not as to the number of passes these boys have obtained but as to the quality of those passes. There has also been social gain under conditions of less streaming: the behaviour of the boys has improved in general, although the overall attitude to school, as measured by analysis of questionnaires, has not altered.

In recent years there has been much speculation and some research in both primary and secondary education as to the wisdom of rigidly streaming pupils in schools. It was hoped that a study in depth of a particular grammar school which was slowly changing from being completely streamed to being unstreamed would supply relevant information on this topic. I have been teaching at such a school and have written a thesis about it: 'A Study of Streaming at a Grammar School'.[1]

Traditional teaching methods are employed at the school and there are terminal examinations in December and July with class places, school reports and ultimately prizes for the top three in each class on Speech Day.

When the school was founded in 1958 the 120-strong eleven-plus intake were streamed A, B, C, D, but this policy was gradually modified to the position where the boys were not streamed (or set) at all in their first three years at the school, then were 'gently' streamed into two strong classes and two weaker classes in the fourth and fifth forms.

The hypotheses which were tested against the null hypothesis are given below.

Relaxation of rigid streaming by ability in a grammar school would lead to:

(a) general improvement of academic performance at GCE 'O' level including a significant increase in the numbers of pupils obtaining a good certificate (five or more passes);

(b) no deterioration in the academic performance of the brighter boys;

(c) considerable improvement in attitude towards school on the part of those who might otherwise be troublesome.

N.B. It is assumed that there is to be no express stream at the school, but a five-year course to GCE 'O' level (and possibly CSE) followed by a two-year course to GCE 'A' level for those accepted into the sixth form.

From each of the first seven intakes 100 boys were selected, carefully matched as to Verbal Reasoning Quotient (VRQ), who could be combined into larger, still carefully matched, groups whose experience at the school varied from five years rigid streaming to non-streaming for three years with 'gentle' streaming later.

The first three intakes, who had been rigidly streamed A, B, C, D throughout their careers, supplied the control group: Group I. The fourth and fifth intakes were a transitional group who basically had been streamed A, B, C, D below the fourth and fifth forms and were then nominally unstreamed in the fourth and fifth forms (i.e. A, B, C, D were called Arts, Science, General,

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[1] DOUGLAS, J. F. (1970). 'A Study of Streaming at a Grammar School', unpublished MA thesis, Liverpool University.

Technical). This group is called Group II but it should be noted that the second of these intakes (Group IIB) were, as far as they knew, not streamed in the first form and also experienced some mixing of A and B streams, and C and D streams, in certain subjects in the fourth and fifth forms. Finally, the sixth and seventh intakes, who formed Group III, were those boys who had not been streamed in their first three years and then were 'gently' streamed in the fourth and fifth forms.

The GCE examination results are shown in Table 1. These include a tiny number of instances where a grade 1 CSE has been obtained in a subject not tried at GCE standard. Successes in Scripture and Additional Mathematics have been filtered out from the performances of later groups because these subjects were not taken by earlier groups.

Table 1: The examination results

	MEAN PASSES PER PUPIL	PERCENTAGE WITH FIVE OR MORE PASSES	PERCENTAGE WITH SEVEN OR MORE PASSES
Group I	3·38	34·67	16·33
Group II	3·53	37·50	17·50
Group III	3·77	43·00	18·00
Group I+IIA	3·36	34·00	17·00
Group IIB+III	3·80	43·00	17·33

By the use of comparison of difference between means and also comparison of difference between percentages it was established (beyond 0·05 confidence level) that the less-streamed Group IIB+III was significantly superior in performance to the streamed Group I and Group I+IIA. There was no significant difference between groups gaining seven or more passes per head.

By careful analysis of each stream it was found that the cause of the improvement was the erstwhile B stream. Whereas earlier the A stream had been good and the B stream poor, now there were two good academic streams. There was no important change in the performance of any other stream.

Analysis of the B stream performances showed (beyond 0·01 confidence level) that the less-streamed Group IIB+III gained significantly more mean passes per pupil than the streamed Group I and Group I+IIA.

Table 2: The performances of individual streams in each group

MEAN PASSES PER PUPIL

Group I	*A* 6·13	*B* 3·54	*C* 2·88	*D* 1·55
Group II	*Arts* 6·26	*Sc.* 3·71	*Gen.* 2·55	*Tech.* 2·02
Group III	*Strong Sc.* 6·31	*Strong Arts* 5·13	*Wk. Sc. Gen.* 2·73	*Wk. Arts CSE* 1·29
Group I+IIA	6·27	3·27	2·78	1·69
Group IIB+III	6·17	5·02	2·70	1·46

PERCENTAGE OF EACH STREAM IN EACH GROUP WITH AT LEAST FIVE 'O' LEVELS

Group I	*A* 83·54	*B* 34·72	*C* 17·46	*D* 3·33
Group II	*Arts* 85·71	*Sc.* 30·61	*Gen.* 22·50	*Tech.* 8·57
Group III	*Strong Sc.* 83·33	*Strong Arts* 65·90	*Wk. Sc. Gen.* 20·40	*Wk. Arts CSE* 4·87
Group I+IIA	84·11	27·36	19·04	5·26
Group IIB+III	84·14	61·42	20·58	5·00

It was also shown (beyond 0·01 confidence level) that the less-streamed Group III, as well as Group IIB+III, had a significantly higher percentage with at least five 'O' levels than the streamed Group I and Group I+IIA.

It can be seen that all this has been achieved without any apparent dilution of the strongest stream's performance.

It has already been said that there was no significant change in the percentage of boys gaining seven or more passes as rigid streaming was relaxed. More of these boys were now to be found in the erstwhile B stream and perhaps they played an important part in the immense improvement which was brought about.

Although the brightest boys did not lose as to quantity of passes there is the very important question of the quality of their passes and here a loss was recorded. In fact the streamed Group I did significantly better (beyond 0·01 confidence level) than the less-streamed Group III both as to the percentage of the group gaining at least one grade I GCE pass and also as to the total number of grade 1 GCE passes obtained per 100 boys. (The actual figures were 18·67 per cent as against 10 per cent and 31 as against 14.)

The results at GCE 'O' level in four subjects which were not options were studied in depth. The statements below should be read with some caution; lack of space prevents any discussing here of the factors, other than streaming, which may have helped to bring them about.

1. *English Language*. Less streaming led to a significantly higher percentage pass, a significantly higher average grade and significantly more boys gaining GCE grades 1 or 2.

2. *Mathematics*. The last three intakes (less-streamed) compared with the first four intakes (much rigid streaming) obtained about six more passes per 100 boys but the average grade obtained by each group stayed constant into the third decimal place. There was a drop of four boys per 100 in the numbers gaining GCE grades 1 or 2. Obviously, then, weaker boys were now scoring pass grades but at the expense of some brighter boys. It must be emphasized that although this trend seems clear, none of the figures quoted here are statistically significant.

3. *Physics (or Physics-with-Chemistry)*. The rigidly streamed Group I was significantly superior to the less-streamed groups as to percentage pass, overall average grade and percentage gaining GCE grades 1 or 2.

4. *French*. The less-streamed boys showed the trend (though not statistically significant here) of a small gain in percentage pass coupled with a slight loss in overall average grade. The rigidly streamed Group I was significantly superior to the less-streamed groups as to percentage gaining GCE grades 1 or 2.

The pattern certainly seems to be that more mixing of the streams produced significantly more pupils gaining good certificates but slightly at the expense of the brightest: not to the extent that they passed less subjects but to the extent that there was a slight, though significant, loss in grades. Many of the teachers felt that this was no great price to pay if it meant that weaker boys improved, academically and socially. The overwhelming majority of the staff did feel that as there had been less streaming so there had generally been improvement in the attitude of the boys.

In order to test the attitude of the boys to the school a Thurstone attitude scale was carefully constructed. Unfortunately the questionnaire was only available from 1966 onwards, after the three most rigidly streamed intakes had passed beyond the fifth form. However, besides the selected boys from the four more recent intakes, it was possible to make some use of a further intake: those boys who were to take GCE examinations in 1970.

It was thought that there would be a significant difference in attitude between those intakes who had known rigid streaming in their first three years and those who had not but analysis of questionnaires filled in by fourth- and fifth-formers showed:

(i) the distribution of boys favourable to the school as opposed to boys not favourable to the school had been remarkably even for five successive intakes;

(ii) those favourable outnumbered those not favourable by two to one.

Thus, it may well be that the overall attitude towards school of any intake will not be altered whatever method of streaming is used by the school.

The entire school filled in questionnaires in 1966 and there were follow-up questionnaires in 1968 (and 1969) when the Junior School of 1966 had become the Senior School. Thus, information was available on some pupils both as non-streamed third-formers and as strong, or weaker, GCE fifth-formers; it was also available on others both as non-streamed second-formers and as strong GCE fourth-formers, general GCE fourth-formers, or CSE fourth-formers. All the available data would fit the following, tentatively suggested, pattern.

1. Attitude to school is highest in the first year, then dips significantly in the second year, then recovers somewhat by the end of the third form and stays more or less constant through the fourth and fifth forms. (Great efforts with the second form might result in raising the attitude plateau of the third, fourth and fifth forms.)

2. There is a dynamic equilibrium in each intake: the existence of an obvious A stream significantly raises the attitude level of the brighter boys while significantly depressing that of the weaker boys. The opposite happens when there is not such an obvious A stream (or D stream).

3. Certain boys who would be troublesome in obvious B or D streams will exhibit better behaviour in a less-streamed situation although their actual attitude to school is unchanged.

In summary, this research indicates that less streaming of the grammar school ability band leads to social and academic gain for more pupils but with some loss in performance by the brightest boys. Perhaps too wide an ability range in the class would increase this loss intolerably.

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SIMULATIONS AND COMMUNICATION SKILLS IN SECONDARY SCHOOLS

J. KENNETH JONES

SIMULATIONS differ from games and informal dramas and their benefits have not been fully realized because of misunderstandings and a subject-bound approach. Most simulations have been used at college level or with adults, and little has been done in the secondary schools, partly due to a shortage of suitable material. The author's eight graded simulations are designed to give practice in communication skills—discussing, organizing, interviewing, assessing materials, presenting a case and speaking in 'public',—all on the level of adult responsibility. Although intended mainly for sixth-form and college level, experiments have been carried out with fourth forms in secondary schools. There was a high degree of motivation and involvement and the simulations achieved their aim of giving practice in communication skills.

Although the use of simulations in higher education, business and the public services has been developing rapidly, very little simulation has been done in the secondary schools.

The main difficulty is the scarcity of material, and most simulation designers have produced sophisticated material, sometimes linked with computers, and demanding adult intelligence and experience. But sophistication is not essential. Some children's games which involve role playing are an unstructured form of simulation—Doctors and Nurses, or Cowboys and Indians. At the present time it is certainly true that most simulations used in British secondary schools are not published material, but have been home-made by teachers with the main purpose of providing an insight into their particular subjects. Thus, the geography teacher produces a geography simulation to provide activities which will help illustrate basic concepts and principles.

While this is admirable in its way, it is blinkered thinking about the value of simulations. It is like mounting a production of 'Macbeth' for the purpose of giving an insight into Scottish history. Both plays and simulations have virtues which transcend the 'teaching a subject' purpose.

What are simulations?

A much-quoted definition by Guetzkow (1963) says 'Simulation is an operational representation of the central features of reality', and Taylor and Carter (1971) say 'In a general sense the term (simulation) delineates a range of dynamic representations which employ substitute elements to replace real world components'.

These definitions form a useful starting point, but they do not help to distinguish between simulations and informal drama, or between simulations and games. In fact, some writers on the subject think there is no distinction. As Banks, Groom and Oppenheim (1970) remark 'It is unfortunate that gaming, simulation, and games theory are terms usually employed indiscriminately as synonymns'.

Games usually involve a large element of chance, whereas simulations do not. Games involve scoring, but most simulations have no scoring. Games are competitive, but many simulations are not. Most simulations involve role-playing, but most games do not. There are, of course, marginal cases difficult to categorize, but in general the distinction between a game and a simulation is fairly obvious.

For example, the Local Authority Game

developed by Armstrong (1970) is not a game but a simulation. It involves a considerable amount of realistic and diverse role-playing. There are teams representing residents, landowners, and the local authority, plus three teams representing development companies. It is an urban development simulation used in higher education and local government training. The chance element is minimal; the outcome depends on the interaction of decisions, the assessment of plans and the course of negotiations.

By contrast, *Monopoly*, although dealing with the subject of urban development, is a game, not a simulation. The role-playing is minimal or nonexistent. The players do not have profiles saying that they are the Managing Directors of a particular company of developers. Most players probably think of themselves as players, particularly as the decision making is done mainly by the dice and the chance cards.

There are closer links between simulations and informal dramas than between simulations and games. As with simulations, informal dramas involve role-playing and the decision making of the participants is a vital element. However, there are important differences.

Informal dramas are usually less structured than simulations. Simple directions are often sufficient—'You are the father, and you are the daughter who has come home late', or 'You are the coloured immigrant looking for lodgings, and you are a white landlord'. In simulations the scenario and profiles are usually far more detailed. The profiles in simulations are concerned with functions, whereas the profiles in informal dramas are concerned with people and their emotions. Often the emotions are specified in informal dramas, and the characters are told that they are happy, or depressed, or dominating, or timid, or bad-tempered. Acting of emotions and feelings is often required. With simulations, the feelings and emotions are not specified, but arise naturally. The participants remain themselves, but with different functions.

There is also a difference in aims. Informal dramas are often introduced to help pupils 'act out their emotions', or 'find out what it feels like to be an immigrant, coal-miner, parent, policeman, magistrate, etc.' Simulations, on the other hand, while they involve emotions and feelings, are more concerned with acquiring knowledge about concepts, functions, organizational problems, or with giving practice in decision making and communication skills.

The point being argued here is not that simulations are 'better' than games or informal dramas, but that they are different.

Previous research in secondary schools

As relatively few simulations have been used at the secondary school level there is an inevitable dearth of research in this area. However, small studies have been carried out, usually on the basis of isolated simulations rather than as part of the curriculum.

A useful example is given by Peacey (1971), using Aldrich's youth club simulation (1967) which is designed to help youth leaders in training. Peacey changed the setting from a pleasant county town to a London borough, and used it with about 90 fourth-year children in the middle and lower ability ranges. His aim was obviously not to teach the pupils how to organize a youth club. He says: 'The English secondary school has not traditionally been noted for its ability to train its pupils to group decision-making and problem-solving. Simulations prove one possible way to achieve such training'.

Peacey found that many pupils appeared unable to think for themselves or express themselves. There was a tendency in the early stages to leave the decision-making to those who were prepared to express their opinions forcibly enough. It was only later that confidence grew and one group leader was summarily dethroned when the group decided that his snap judgments were not helping at all. The teachers involved were aware, as an abstract fact, that some children of this age and ability find it appallingly difficult to argue on the basis of written material, but a full realization of what this meant was clearly seen when the pupils were faced with taking decisions on their own.

These difficulties noted by Peacey do not appear to be unusual. But they should not be regarded as reasons for not using simulations. Rather are they an argument in favour of simulations or any other technique to give the secondary school pupil the opportunities of practising decision making and communication on a responsible level.

Problems of evaluation

If the aim of simulations was to teach certain facts, then there would be no problem of evaluation. Matched groups could be given the task of learning such knowledge by simulation and by alternative techniques, and the results could be compared. In the United States such experiments have been carried out, and as Garvey (1971) points out 'There is no evidence known to support any hypothesis that simulation is more effective than any other teaching technique in enabling a student to acquire knowledge'.

But most simulations have more generalized aims which are not susceptible to objective testing. How could one measure a gain in decision-making ability? Simulation is an educational technique and is as difficult or as impossible to evaluate objectively as it is to measure the value of the lecture, or discussion, or individual group assignment as educational techniques. Consequently, the research evidence is based on the subjective assessments of the students, or teachers, or observers. There is nothing discreditable about subjective evaluations; they are used all the time in our evaluation of books, plays, people, ethics, music and behaviour.

The graded series of simulations

The author has devised eight simulations (Jones, 1969) and they are graded in relation to structure, content and the degree and type of communication involved. The aim is to give practice in communication skills—discussing, arguing, persuading, co-operating, organizing, interviewing, reporting, assessing documents, presenting a case, and speaking in public—all on the level of adult responsibility.

In the first simulation each participant has a personal profile of about 100 words containing information about the hostile environment. In 'Red Desert' they are survivors of a plane which crashed during a storm on an oasis. They have a compass but no map. Map sections, representing one day's walk, are supplied each 'day' as they decide in which direction to travel. The communication is at the simple level of informal group discussion. 'Shipwrecked', which is similar to 'Red Desert' but with new elements, is also part of the first simulation.

In the second simulation, 'Front Page', the participants are sub-editors making up the front page of a local newspaper and writing headlines as news flows in. There is a deadline. The material has to be selected, but not rewritten. The discussion is informal.

'Radio Covingham', the third simulation, introduces an element of public speaking, as the participants have to produce a ten-minute local radio programme of news and views from given material, but providing an interview or two themselves.

The fourth simulation, 'The Dolphin Project', has town councillors debating a controversial civic project, the proceedings being reported by journalists from local newspapers and radio.

'Appointments Board', is a formal interview situation for the post of head teacher of a comprehensive school with individual profiles for candidates and board members, plus the school's prospectus. This fifth simulation gives each candidate an equal chance because the Board are evenly divided on the two issues mentioned in the profiles: how much authority to delegate, and whether formal or informal teaching should have preference.

In the sixth simulation, 'Airport Controversy', the participants are local authorities, businessmen, anti-noise campaigners, plus journalists, and there are campaigns and a public inquiry.

The seventh simulation, 'The Azim Crisis', is an international simulation with statesmen and journalists representing different (fictitious) countries, and a meeting of the United Nations.

The eighth and final simulation, 'Action for Libel', involves counsel and judges who deal with (actual) libel cases. This is almost certainly the most difficult of the simulations and involves a very formal type of public speaking. As with the other simulations, it is designed for maximum participation. There is no jury in order to avoid passive roles, and no witnesses so as to eliminate part-time roles. The facts of the case are agreed by both sides, the questions to be argued are whether the plaintiff's reputation was damaged, whether the statement complained of was fair comment, etc.

Most of the series had been devised in 1967-68 and tried out with encouraging results with sixth forms.

The 1971 experiments

The 1971 experiments moved lower down the secondary schools in both age and ability. These were carried out with the permission and co-operation of the Research and Statistics Group of the Inner London Education Authority, and the author is most indebted for the help provided.

Boys' school, West London

The school is in one of the worst areas of London, a 'twilight' area. One of the higher streams of 14- to 15-year-olds, containing about two-thirds coloured immigrants, tried out three simulations: No. 1 'Red Desert—Shipwrecked', No. 2 'Front Page', and No. 5 'Appointments Board'.

The pupils' preferences varied considerably, as can be seen from table 1.

Table 1

Sim. No.	*No. of pupils*	*liked a lot*	*liked slightly*	*not liked*	*very useful*	*slightly useful*	*not useful*
1	20	16	3	1	9	11	0
2	18	7	7	4	10	6	2
5	21	1	8	12	5	7	9

The 'liked' and 'not liked' question was to assess the motivational aspect. The pupils were told that the 'useful' and 'not useful' question meant usefulness in giving practice in organizing, speaking, arguing and deciding on their own, without being told what to do. However, several pupils ignored this explanation and interpreted 'useful' as meaning 'useful for passing examinations and getting jobs'—presumably because they had been conditioned to think in vocational terms, and failed to see that simulations could be of indirect help in passing exams and getting jobs.

The relative unpopularity of 'Appointments Board' may have been due to difficulty in jumping the gap between No. 2 and No. 5, but it was more likely due to 'Appointments Board' being introduced by the author, the teacher being too busy, and although the author knew the material very well, he did not know the pupils.

The pupils were also asked for written comments. Here are some typical replies:

'I liked "Red Desert" and "Shipwrecked" because you had to take chances and risks and we worked together. I liked the second simulation because at a certain hour you have to meet the deadline. It is good because you know now what it is like to be a reporter. The third simulation I did not like because you have to be asked questions and I do not like that'.

'I liked "Red Desert" because it made you think and use your intelligence and the same with "Shipwrecked". I didn't like "Front Page" because in one of the reports you had some bad things about another person so it was hard.[1] "Appointments Board" is very useful when you really do have an interview'.

Girls' School, North London

This school was also in a deprived area, but there were fewer immigrant children.

The first two simulations were used at fifth-form level with one of the bottom streams. The teacher's report raised several interesting points:

'I used these simulations with a small group of 15-year-old girls (approx. 10 girls) two weeks before the end of term. The group was comprised of lower ability girls, several of whom were Greek and Turkish Cypriots, and who had found great difficulty in operating in a group situation. They were lacking confidence and considered that anything that was not writing was a waste of time.

'I was rather apprehensive about using the simulations with these girls as I thought they would dismiss them in five minutes and want to start writing. In the first session of one hour and ten minutes I introduced "Red Desert". I was absolutely amazed—they were completely absorbed and operated as a group, everyone participating, discussing the situation and listening to each other!

'The second session was just as successful. The girls constantly discussed how they were going to get off the island in "Shipwrecked" and the group participation was similar to that of "Red Desert"'.

'When we attempted "Front Page" they found it much more difficult because they were nervous of failing, and there had been some kind of quarrel within the group—nothing to do with the simulation.

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[1] This is a reference to a news item which was libellous.

'We sub-divided into two groups and although at first they were loathe to participate they kept going for the whole of the session and in fact at the end the group that had been the most hostile to each other were having a splendid discussion about what kind of news items ought to be included in the front page of a newspaper.

'I was extremely impressed by this, having worked with pupils who are easily put off keel by whatever has happened before the lesson and I would never have believed that they would have been able to overcome their feelings in one lesson. Too often young people (and older people) are nervous about making decisions, nervous about coping with new situations and nervous about public speaking, etc. The simulations seem to offer an opportunity for young people to be able to develop these skills in a very real way instead of just being told they must do so'.

Mixed School, North London

The social and cultural background was described by the staff as being about average. Two classes of fourth-formers took part in simulation No. 2 'Front Page', and No. 8 'Action for Libel'.

One class, the upper stream, was remarkably accomplished in both simulations, although they had never previously participated in a simulation. The interest level was high and discussion was lively.

The second class of lower ability children were less accomplished, and less able to present their cases effectively. However, their interest was also considerable as can be seen from the following typical comments:

'I thought the simulation experiments were very good. It was something different, and also it took the form of real life. The one thing I do not understand is what help it will be in English Literature'.

'I think that the simulation experiment was useful to us in making us use our intellect and judgment'.

'I think the simulation experiments went very well. I think that they are a good benefit. We now know more what happened in a court, we know the laws, and we know the procedure in a court. The first simulation we did, "Front Page" was very enjoyable. So was the libel simulation. The first case was not very hard. I found the second case was the hardest of them all. I was a judge in that case and I had to decide who was right and who was wrong, so it made it even harder. A most enjoyable experiment'.

Conclusions

From the comments by teachers and participants, it was clear that the simulations achieved their aim of giving practice in organizing, thinking, presenting a case, and decision making at a level of adult responsibility.

It is not possible to measure such gains objectively, as distinct from subjectively. However, it seems plausible to assume that where there is a high degree of motivation and involvement in tackling new problems and communication skills there is also a transfer of training beneficial to the general ability to think, articulate, communicate and take decisions.

The experiment can be regarded as an encouragement to designers of simulations to provide material suitable for use in secondary schools. In the author's experience, there is a considerable unfulfilled demand for such material.

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E

THE EFFECTS OF EXTROVERSION AND METHODS OF PROGRAMMED INSTRUCTION ON ACHIEVEMENT

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VARIOUS EXPERIMENTS have been devised to gauge the relationship between extroversion and introversion towards academic performance. A review of these investigations reveals that overall extroverts do better on more ambiguous tasks in loosely structured learning situations whereas introverts are more successful in closely guided sequences of learning. The administration and procedure of one programme given to 145 first-year mixed comprehensive pupils is described in detail. Analysis of the post-test scores revealed a significant difference between ability levels and a significant interaction between methods of instruction and extroversion, thus confirming earlier findings. That the success of extroverts and introverts in school learning situations is related to the methods of instruction used argues for the possibility of adapting teaching methods to different kinds of pupils.

Introduction

Although the evidence is not completely unequivocal, recent summaries of research on the relationship between extroversion and academic performance tend to agree that introverts have higher achievement (Warburton, 1962; Rushton, 1966; Lavin, 1967). Similar findings have been made also by Leith (1969) and Leith and Davis (1969). Introversion/extroversion is a dimension of personality which is normally distributed. That is, most people are around average, while others can be placed towards one extreme or the other. Introverted people tend to be conscientious, persistent, able to carry out repetitive tasks, acquire conditioned responses readily and are slow to lose them. Extroverts on the other hand are more easily distractable, quickly find repetitive tasks boring, like variety, condition poorly and lose conditioned responses quite quickly. There are also differences in outgoingness and sociability. These and other differences have been explored by Eysenck (1965), and by Cattell (1965)—the characteristics outlined seeming, perhaps, to account for the academic superiority of introverts. That the relationships are more complex than such evidence suggests can, however, be inferred from a series of investigations in which introverts have been shown to have higher achievement in some learning situations but extroverts in others. These conditions may be characterized in terms of the amount of guidance and prompting given to learners and the degree of apparent structure present in the situation. Thus, in an experiment on learning how to solve odd-man-out problems, involving figures and spatial patterns, extroverts learned better from a random arrangement of problems which provoked many initial errors, while introverts were more successful if they followed a carefully sequenced, highly prompted structure of learning (Leith and Wisdom, 1970).

In an elaboration of these situations, Shadbolt and Leith tested two versions of a programme on genetics. One of them required learners to attempt to find principles to explain the inheritance of characteristics in a family tree. It was constructed in such a way that learners' solutions were found to be ambiguous and many errors were provoked. The other version was carefully structured, unambiguous and arranged to build up the concepts and principles involved, progressively. The first step was to make sure that the two versions were not different when given to a randomly chosen groups. Following this, a sample of over two hundred students was taught by means of the programmes after being divided into extroverts and introverts at the median score on a personality test. The result was that, while the treatments showed no difference, overall, extroverts were better than introverts with the more ambiguous task, and the reverse was the case with the closely guided one (Leith, 1968).

In yet another experiment there was a significant correlation between extroversion and attainment among adults learning from materials which required personal organizing and checking of the work, though a linear programme eliminated the correlation (Leith *et al.*, 1968).

Extroverted children learning a topic in modern mathematics obtained higher scores if they had practice before receiving abstractions while introverts were slightly (though not significantly) better if they had the rules before practising (Leith and Trown, 1970).

The last experiment was a follow-up of studies in which summaries or rules given after presentation of learning materials had been found to be superior to the same abstractions given before, as an overview or advance organizer (Leith, 1971). One of these studies made use of two sets of materials—a conventional small-step programme of 274 frames; the same concepts presented in seven large chunks. From these materials, two further programmes were made: a programme in which each section of the small-step programme was followed by the corresponding 'chunk' and one in which the chunks were followed by sections of the linear programme. If test questions were correctly answered, the small-step section could be skipped. If answers were incorrect these sections acted as remedial sequences (skip-branching) (Leith and Webb, 1968).

The linear programmes (rainfall in Britain) taught seven topics in elementary meteorology: water as a liquid and as a gas (68 frames); types of clouds (44 frames); how clouds form (35 frames); rainfall and its measurement (32 frames); orographic rain (36 frames); convectional rain (31 frames); frontal rain (28 frames). Included in the programmes were four panels, referred to at different places in the programmes. These were on cloud types, location and rainfall records of several rainfall stations in the British Isles and maps of relief, distribution of rainfall, July isotherms, snowfall and frequency of thunder.

The large-step programme was prepared in the form of summaries of the seven sections (including diagrams) and each was followed by the corresponding criterion frames from a section of the small-step programme. In the skip-branching programme all of these criterion frames had to be answered correctly in order to skip. Failure to respond correctly to one of them entailed taking the remedial sequence.

The post-test consisted of 36 items—three on cloud recognition, six on drawing diagrams and 27 unaided recall items. Pre-test results showed that there was little, or, in most cases, no knowledge of the topics. The teaching covered a period of five weeks at the end of which the post-test was given.

In an analysis of part of the school sample, it was successfully predicted that the large-step, the small-step and the skip-branching programme would be poorer than the small-step plus large-step programme since the latter would act as reviews, whereas the branching programme would be like a rules-before-practice task. It was also predicted that the addition of a review given by a teacher at the end of the programmed tasks would eliminate the differences between treatments.

All of the findings described above suggested that, in spite of the improvement in scores resulting from a teacher review, there would be an interaction of type of programme with extroversion. More specifically, the large-step plus small-step (skip-branching) programme would favour introverts and the small-step plus large-step programme would favour extroverts. Again the large step alone would be better for extroverts while the small steps alone would favour introverts. Complete records including scores on the H.B. Personality Inventory (Hallworth, 1962), were available for one hundred and forty-five children in first-year classes in a mixed comprehensive school who had been given the programmes. The entire sample was divided into groups above and below the median IQ which lay between 103 and 104 for both boys and girls (IQ range <75 to >125, Raven's Progressive Matrices). Examination of the distributions of Extroversion test scores revealed: that they approximated to normality; that the modal score of each sex was the same; and that the mode and the medians were close together. The two sexes were pooled and, to improve the precision of the analysis, the 40 subjects having the modal score were eliminated.

Results and Analysis

The post-test scores of the 105 remaining children were submitted to analysis of variance. Because the numbers of subjects in subgroups was unequal, an unweighted means analysis of variance was used (Walker and Lev, 1953). Average scores obtained by the different groups of children are shown in Table 1 in which high and low ability groups have been combined, since they show the same pattern.

The analysis is summarized in Table 2.

As expected from the results reported in a previous article (Leith and Webb, 1968), no differences were found between the four programme conditions. There was a significant difference between ability levels. In addition, a significant interaction between methods of instruction and extroversion was found. No other significant effects appeared. The interaction is summarized in Table 1 and detailed in Table 3.

The review given by the teacher after completion of the programmes is likely to have reduced the variation in scores between the groups (Leith and Webb, 1968). In view of this, and the fact that all the differences are in the predicted directions it was considered legitimate to compare introverts and extroverts within each treatment, by means of one-tailed tests. The results are shown in Table 3.

Table 1: Average* Post-Test Scores of Introverts and Extroverts Given Four Methods of Programmed Instruction

Personality	*Type of Programme (number of subjects in brackets)* LS	SS	SS+LS	LS+SS
INTROVERTS	17·3 (11)	24·4 (12)	18·1 (12)	21·2 (11)
EXTROVERTS	19·9 (18)	19·4 (12)	22·3 (12)	20·5 (17)

*Calculated from means of subgroups

Table 2: Analysis of Variance of Post-Test Scores

SOURCE	d.f.	M.S.	F	P
Treatments	3	7·66	2·12	N.S.
Ability	1	21·16	5·85	·005
Extroversion	1	0·30	0·08	N.S.
Tr. × Abil.	3	7·64	2·11	N.S.
Tr. × Extrov.	3	16·28	4·50	·01
Abil. × Extrov.	1	3·07	0·85	N.S.
Tr. × Ab. × Extr.	3	1·52	0·42	N.S.
Error	89	3·62		
Total	104			

Table 3: Comparisons of Introverts and Extroverts on Four Types of Programmed Instruction

TYPE OF PROGRAMME	PREDICTION	RESULT	SIGNIFICANCE (ONE-TAILED TEST)
Large Step	Extrovert > Introvert	Confirmed	$\cdot 10 > p > \cdot 05$
Small Step	Introvert > Extrovert	Confirmed	$p < \cdot 025$
SS+LS	Extrovert > Introvert	Confirmed	$p < \cdot 05$
LS+SS (Skip-Branching)	Introvert > Extrovert	Confirmed	N.S.

Discussion

In a number of studies, attention has been drawn to the existence of interaction between methods of instruction and introversion/extroversion. A reason suggested for these findings is that extroverts have a greater tolerance for ambiguity and lack of structure in the teaching situation, whereas introverts are more inclined to be responsive to unambiguous and clearly-structured situations. The earlier findings suggested that interactions would again be found in an experiment comparing different styles of programmed instruction: conventional, small-step, linear; large-step adjunct; skip branching; and a linear programme with review summaries. The differences expected were that extrovert pupils using the less supportive, adjunct programme would be better than introverts, while introverts would be the more successful group with the small-step programme. Again, in line with previous work, the skip-branching programme (which is, in effect, summaries before practice) was expected to favour introverts and the small-step programme with reviews to favour extroverts.

All of these predictions were fulfilled, two of them at the five per cent level or better, another reaching a probability level between five and ten per cent while one was not significant.

Since the addition of a review lesson given by a teacher reduced the differences between experimental treatments (as compared with groups not having the additional lesson) the finding of these interactions may be considered to give support to the view that the success of extroverts and introverts in school-type learning situations is reliably related to the methods of instruction employed. Analysis of the characteristics of methods compared in the experiments gives rise to the possibility of writing prescriptions for teaching methods adapted to the learning styles of different kinds of pupils.

The repeated finding of teaching methods × extroversion interactions also suggests a reason why many of the methods comparisons in educational research have given 'no-difference' results. It is not that the different methods are interchangeable—rather that each is successful and unsuccessful with different kinds of pupils. It can be added that reports of the relationship between extroversion and academic achievement tend to show introverts as somewhat the more successful (Furneaux, 1962; Warburton, 1962; Leith and Davis, 1969; Davis, 1970). The conclusion to be drawn, it may be claimed, is that educational provision tends to be formal and direct. As a consequence, extroverts, who appear to learn better in 'discovery' situations, are inadequately catered for in our education system.

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(*Manuscript received January, 1972*)

LEADERSHIP EFFECTIVENESS IN AN EDUCATIONAL SETTING

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and
DEREK CHERRINGTON *Anstey College of Physical Education, Sutton Coldfield*

Fiedler's theory of leadership effectiveness was tested in the setting of a school practice period in a specialist college of physical education. Leader-member relations, task structure, and position power, the three elements in Fiedler's model, were respectively operationalized as student teacher-pupil relationships, games skills or movement and dance, and overall favourableness of the school situation. Although the correct prediction of appropriate student teacher leadership style was significantly beyond chance, the discussion of results questions whether the data provide support for Fiedler's contingency model.

Introduction

A recent article setting out the basic propositions of Fiedler's theory of leadership effectiveness points to the need for Fiedler's model to be validated in educational environments before any generalizations can be made about the effectiveness of one teaching style over another (Davey, 1969). The present study reports just such a validation exercise conducted during a school practice period in a women's specialist college of physical education.

Briefly, Fiedler's (1964, 1966, 1967) contention is that the effectiveness of a particular style of leadership (student teacher behaviour in this case) is contingent upon three major elements in the total situation. Firstly, the quality of *leader-member relations* is crucially important. The well-liked teacher, for example, highly respected by her pupils, may seldom have recourse to negative sanctioning in order to motivate her class to accomplish required tasks. By contrast, the teacher who is actively disliked and held in poor esteem by her class may find it necessary to evince quite a different form of leadership to that of her more fortunate colleague.

Secondly, the nature of the task itself, the *task-structure* as Fiedler calls it, is directly related to the appropriateness of the style of leadership that is exercised. Where, for example, physical education students are concerned with teaching a specific series of movements in connection with strokes in tennis or tactics in netball or lacrosse, situations in which sequences can be broken down, practised step by step, corrected and repractised, the appropriate teaching style is very different from that applicable to highly unstructured situations such as movement and dance, where spontaneous, individual or group creativity is more likely to be the objective rather than correctly-executed sequences of specific movements.

Thirdly, there is what Fiedler calls *position power*. Quite apart from whatever charismatic qualities the teacher possesses, there is the laten authority residing in her official position a teacher, the authority to enforce school rules an regulations, to reward and punish pupils etc Clearly, position-power from the point of view o student-teacher very much depends upon th situations existing in the schools and the classe to which they are assigned for teaching practice.

Fiedler contends that depending upon th quality of leader-member relations, the structu of the task, and the power invested in the positio of leader, one style of leadership is more effective than another. He distinguishes between leadership that is 'controlling', 'task-oriented', and 'autocratic', and leadership that is 'permissive', 'considerate towards group members', and 'democratic'. In a wide variety of leadership settings, Fiedler and his associates have shown that by the use of a short semantic-differential scale, it is possible to distinguish between leaders who evaluate a least-preferred co-worker (LPC) in a relatively favourable light and those who assign to a least preferred colleague a highly unfavourable rating. The LPC rating effectively distinguishes between the controlling, autocratic leader (low LPC score) and the considerate, democratic leader (high LPC score). An eight cell typology of group-task situations derived from Fiedler's contingency model is shown in Table 1, together with the style of leadership judged as more effective in each specific group-task situation.

Table 1: Effective leadership style in relation to group-task situation

Cell	LEADER-MEMBER RELATIONS	TASK STRUCTURE	POSITION POWER	LEADERSHIP STYLE (LPC)
1	Good	Structured	Strong	Low
2	Good	Structured	Weak	Low
3	Good	Unstructured	Strong	Low
4	Good	Unstructured	Weak	High
5	Poor	Structured	Strong	High
6	Poor	Structured	Weak	High
7	Poor	Unstructured	Strong	High
8	Poor	Unstructured	Weak	Low

Method

The five week school practice session in a specialist physical education college was selected as an appropriate setting for testing Fiedler's contingency model for the following reasons:

(i) *Leader-member relations* (i.e. student teacher-pupil relationships) were readily observable to outside expert judges in the persons of the visiting school practice tutors. Student teachers were rated on leader-member relations by means of a nine-point scale ranging from 'excellent' (9), through 'moderate' (5) to 'very poor' (1).

(ii) *Task-structure*. As in most specialist physical education colleges, students choose a dance or a games emphasis in their main subject P.E. course and are assigned to teach mainly movement and dance classes or games classes in their school practice period. The dance students were judged to be concerned largely with unstructured situations, the games students with structured tasks.

(iii) *Position-power* was operationalized as the overall favourableness of the teaching situation for the student teacher. School practice tutors* were asked to rate on a composite scale, the general discipline of the school and the control exercised by the regular teacher to whom the student was assigned. Position power was scored from 'excellent' (9), through 'moderate' (5), to 'very poor' (1).

(iv) *Leadership-style*. Fiedler's 16-item bipolar semantic scale was used to obtain measures of students' teaching styles. The rubric introducing the LPC measure required students to 'think of the pupil with whom you can work least well.' It was emphasized that the pupil need not be the child whom the student liked least well but should be the one with whom she had the most difficulty in the day to day work of the class.

(v) *Assessment of teaching ability*. Finally, school practice tutors completed a nine-interval rating scale, 'excellent' (9), 'moderate' (5), 'very poor' (1), to give an overall assessment of the students' teaching ability. Tutors were encouraged to use the full range of scores on the teaching ability, leader-member relations, and position-power scales.

Sample

The sample comprised 70 second-year students, 22 teaching mainly dance during the school practice period, 48 teaching mainly games.

Results

Table 2 shows the means and standard deviations for the three tutor-based and one student-based measures. Frequency distributions were dichotomised at the respective means to give (i) good and poor leader-member relations, (ii) weak and strong assessments of position power, (iii) high and low LPC scores and (iv) high and low teaching ability assessments.

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*Students also completed a ten-item semantic differential scale intended to elicit their assessment of the atmosphere in the class(es) in which they did their teaching practice (Fiedler 1967). Position power was measured by the tutors' 'objective' assessment of the favourability of the school situation rather than students' 'subjective' perceptions. The tutor measure and student measure were, however, significantly correlated (r=·276, p<·02).

Table 3 presents the intercorrelations between the four measures.

Table 2: Means and standard deviations for measures of leader-member relations, position power, LPC, and teaching ability

MEASURE	$\bar{x}$	σ
Leader-Member Relations	6·12	1·45
Position Power	5·80	1·81
LPC	57·17	13·32
Teaching Ability	5·92	1·37

Table 3: Intercorrelations between leader-member relations, position power, LPC, and teaching ability scores

MEASURES	TEACHING ABILITY	LEADER-MEMBER RELATIONS	POSITION POWER	LPC
Teaching Ability	—	·805	−·020	·125
Leader-Member Relations			·012	·071
Position Power				·189

[$n=70$; r ·232; $p<{\cdot}05$]

A summary profile was drawn up[1] of the group-task situation for each individual student as revealed by her tutor's assessment of leader-member relations, position power, and teaching ability, and the student's own self-reported leadership style. Each profile was identified according to Fiedler's eight-cell typology and the 'appropriateness' or 'inappropriateness' of the student's leadership style was recorded. Finally, the tutor's high or low assessment of student teaching ability was identified as 'correct' or 'incorrect' in the light of the total group-task situation revealed by the summary profile.

Discussion

The analysis of the summary profile showed that in 48 cases out of 70, students were 'correctly' rewarded according to the contingency model in terms of tutors' assessments of their teaching ability. This finding is statistically significant[2] but what exactly does it mean? Is it acceptable evidence from which to conclude that Fiedler's model of leadership effectiveness is validated in this particular educational setting?

If it can be assumed that tutors' overall ratings of teaching ability *are* based upon composite assessments of the relevant factors in the group-task situations that go to make up each individual teaching practice experience, then the data provides convincing support for Fiedler's contingency model. Table 3 however suggests that such an assumption is questionable.

Only the strong positive correlation (.805) between leader-member relations and teaching ability grade is significant. Neither position power nor leadership style (both taken separately) are significantly correlated with teaching ability grade. More importantly, when leader-member relations, position power, and leadership style are examined for their simultaneous relationship with teaching ability grade by multiple correlation, the resulting R_m is only .809. It would seem that despite the correctness of school practice tutors' assessments as predicted by the model, tutors are, in fact, basing their awards solely upon what they perceive to be leader-member relations. Observations of position power and leadership style appear to be largely irrelevant in this judgemental process.

One major weakness in this present attempt to apply Fiedler's model of leadership effectiveness in an educational setting, is the inability to assign differential weightings to the three major dimensions of the group-task situation. It could well be for example, that 'leader-member relations' *is* the most important element in Fiedler's model when applied to the school practice situation whereas in another educational context effectiveness is judged to depend more upon one or other of the dimensions of the contingency model.

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[1] Available from the first author on request to the School of Research in Education, University of Bradford, Bradford BD7 1DP.

[2] By the Goodness-of-fit test $\chi^2=8{\cdot}92$, $p<{\cdot}05$.

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(*Manuscript received April, 1972*)

BOOK REVIEWS

Moral Learning and Development

by Douglas Graham

Batsford, 1972, 317 pp., £3

As a general survey of the state of play in this field to date, Graham's book is much to be commended. It is clearly written, reasonably comprehensive, and does sufficient justice to the various workers who have tackled the area from Hartshorne and May onwards. Students, at least, will find it of great value.

Somewhat less satisfactory, perhaps, is Graham's lack of awareness about how the area itself is to be defined, and of the conceptual problems which bear heavily on practical research. We are not entitled to expect a full philosophical treatment; but we are, I think, entitled to expect a sufficient acknowledgement of some of the problems. This weakness comes out, naturally, in the author's own comments rather than in his *reportage*. Thus, he is contented to define 'development' as 'progressive change in individuals which takes place over time', and loses his way badly over 'the term "moral"', which he says, 'may be used in three main senses'. One of the main problems about research in 'morality' or 'moral development', of course, is to know what we (or the researcher) are to count as falling within the area of 'morality' and what as falling outside it—and few writers make this clear. Piaget and Kohlberg, for instance, may be talking only about what the present writer, at least, would regard as only one particular segment of 'morality': roughly, about 'social morality'. This leaves a very great deal out of the picture.

More significantly, it needs at least to be pointed out how conceptual problems affect the validity of particular researches. Much of the research on 'moral judgement', for instance, takes it for granted that sentences in the indicative mood ('It's wrong', 'You ought not to do this', etc.) are *judgements* or *beliefs*. This may sometimes be so, but sometimes not: there may be no question of believing or judging at all—the speaker may only be expressing his feelings. There is insufficient recognition, too, of the extent to which (as R. S. Peters has suggested) Kohlberg's 'stages', like Piaget's, may be logical inevitabilities and not empirical discoveries at all. In particular there is a failure to appreciate the fact that moral thought and action involve a large number of very *different* skills, attitudes, abilities and so on, so that any *one* 'theory of development' is bound to fail. We should by now have got past the point at which it is possible for psychologists to produce 'rival theories' of learning or development; what we need, to make any sense of the findings we have so far, is a much closer study (both conceptual and empirical) of the phenomena themselves—the time for 'theories' will be later. As Graham says, 'The results of research so far have scarcely been commensurate with the amount of effort expended'.

Fortunately these limitations do not vitiate the book as a whole. Graham is refreshingly free from most psychological jargon, and able to write English. He is at his best, perhaps, in discussing the psychoanalytic school of writers: at his worst, in being insufficiently critical of the grotesqueries of some of the 'learning theorists'. It is a straightforward and perceptive account of the field, from which the reader may learn a great deal.

JOHN WILSON

Teaching Practice: Problems and Perspectives

A reappraisal of the practical professional element in teacher preparation

by E. Stones and S. Morris

Methuen, 1972, 300 pp., £3·80

It is perhaps a happy coincidence that this volume was compiled and written before the publication of the James Report, for comments and arguments probably carry more weight if independently produced. The book takes a critical look at the generally accepted method of classroom practice and brings together a number of research papers.

In part one the authors present a detailed analysis of the aims and objectives of teaching practice. They criticize the traditional approaches and argue that what is needed is a model which seeks to master the techniques required in the classroom. This is followed by a section called 'Innovations and Perspectives'. Here the problems of teaching practice are described and arguments presented for the implementation of the new approach. There are separate chapters on simulation, microteaching, interaction analysis and the teaching model itself—each aimed to help the student in his mastery of the teaching model. In the last part of the book are 11 papers, all but one by different authors. These are an interesting collection though, inevitably perhaps, there is a certain amount of repetition between these and earlier chapters.

This book will prove a useful addition to any education library and an excellent starting point for discussions centered on the many difficult issues involved in teaching practice. The book itself provides a fresh look giving helpful advice and suggestions on how this may be achieved by others.

J. M. Ross

Teaching Modern Languages Across the Ability Range

Cilt Reports and Papers 8
Centre for Information Language Teaching, 1972, 82 pp., 65p

The pamphlet consists of a number of papers which arose from a conference held in March 1972, entitled 'Teaching of foreign languages to all pupils and across the ability range'. The contributors, who include practising teachers, educational administrators and researchers in the field, set out to highlight some of the problems encountered when modern language teaching is offered to the whole ability range. The discussion is, in fact, based on experience of French teaching as this is the language most commonly taught in English schools.

While the writers agree that where French is taught in primary schools it is desirable that no children in the relevant age-groups should be excluded and that this applies in the first year or two of secondary schooling as well, they express an urgent plea for the objectives of language teaching to be redefined with a view to establishing 'realistic' goals for pupils of differing ability. Research in the area has shown that it is unrealistic to expect all pupils to reach the same level of achievement and many of the papers in the pamphlet suggest ways in which course materials could be tailored to the needs of different ability groups, especially the 'less-able' children. It is stressed by A. W. Hornsey in his paper 'A foreign language for all' that language must be viewed as a 'tool', a means to an end, and not as an end in itself, and, if pupils are to benefit, they must become sufficiently familiar with the language in order to manipulate it easily. Furthermore, if, as M. V. Salter suggests, 'slow learners' comprehend more French than they can produce, then courses should be created which best exploit the language skills the 'less-able' child is capable of dealing with. Courses specially designed for the 'less-able' will, it is hoped, contain material which is stimulating to the pupils and which sustains their interest. The pupils' motivation to learn is, after all, an integral part of the success of language teaching.

While it is both important and valuable that conferences and publications should combine the views of many interested parties in any particular field of education, there exists the danger of centring discussion on the specific issues while ignoring the more general questions. In none of the papers was the fear expressed that the creation of courses specially designed for pupils of 'low ability' would yet again serve to 'label' these pupils as such. One does not need to delve very deep into the work of educational research to understand the implications of this.

Monika Jamieson

The Sociology of Education (2nd ed.)

by P. W. Musgrave
Methuen, 1972, 367 pp., £2·75, paperback £1·30

A very successful first edition of *The Sociology of Education* was published in 1965. In the rewritten

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version, which is presented in three sections, Musgrave has reorganized much of his earlier material and added the results of more recent research.

Part 1 of the text, which focuses on the position of the child in society, examines the influence of the family, school, peer group, and mass media on the process of socialization. In Part II, forces which influence both the role of the teacher and the nature of the curriculum are analysed, while in the final section the political, selection, and economic functions of education are discussed.

The book is designed to serve as an introduction to the sociology of education for intending teachers. It is very readable, free from an overuse of jargon, and covers a very wide range of topics. But the coverage is very general and often superficial. There is a failure to examine in any detail many of the major sociological problems which will confront the beginning teacher. Topics such as the influence of bureaucracy on teachers and students; the inter-relationship between ethnic group membership, environment and student behaviour; factors associated with both student and teacher alienation; and the analysis of classroom environments and classroom interaction are treated either minimally or not at all.

However, it is not possible to discuss everything in an introductory text. But it is the attempt to write a general text with the inclusive title of *The Sociology of Education* which arouses my major criticism. In the last decade there have been major advances in the application of sociological theory to the study of education, and an increased sophistication in the methodology applied to the sociological examination of educational problems. The present text, because of its general orientation, does not do justice to these developments. Probably no single text can any longer hope to cover with any success the amount of sociological material which is related to education.

Musgrave's book is a useful introduction to the structure of the English educational system, and because of this, the text will prove to be valuable for intending teachers and as an introduction for students of comparative education. But although it brings together many interesting empirical findings, it fails to present a strong, elegant, underlying theoretical framework which could be used by intending teachers to formulate hypotheses about the sociological nature of the classroom situation. A sociological text for teachers which fails to provide such a theoretical framework has not, perhaps, fulfilled its task.

KEVIN MARJORIBANKS

The Student Trap

by John Hajnal

Pelican, 1972, 288 pp., 45p

The student in the English Education system is trapped into earlier and more rigid specialization than his peers in any other major industrial society. He has little opportunity to study subjects outside his chosen major disciplines, and it is difficult for him to change to a new subject part way through his course in the sixth form or at university. The damaging effects both for many individuals and for society are powerfully argued by John Hajnal in this frankly polemical book.

Hajnal attacks the Crowther Report's assumption that 'able boys and girls are ready and eager by the time they are 16—the ablest by 15—to get down to serious study of some one aspect of human knowledge and regards as fallacious the idea that intellectual excellence must be combined with extreme specialism. Many able students have wide-ranging interests yet are limited in the sixth form to three or four subjects, normally in related fields.

Hajnal suggests that the failure of our system to give an adequate mathematics education to non-scientists will have most undesirable long-term consequences. An increasing proportion of the highly educated population need to use or at least understand mathematical and statistical techniques. For many these are not studied at school beyond O-level, though social scientists are normally required to study some statistics as part of their degree course. The likely gap of two or three years creates problems that continuous study would overcome. The students have forgotten many basic skills while the lecturers often fail to comprehend their difficulties. The teaching of such lower level courses in high level institutions are often seen as demeaning by students and staff alike. It is essential that the importance of such courses be recognized. There is a similar need to encourage the development of other skills, notably modern languages to reduce our

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insularity from many aspects of the continental intellectual tradition.

In discussing the place of disciplines such as mathematics Hajnal develops the concept of 'formal knowledge'. It is difficult to define the meaning of this term briefly, but it is applicable to the type of knowledge characteristic of mathematics, classics or basic language skills as opposed to that in history or geography. It is feasible to give a lecture in the latter disciplines to an intellectually heterogeneous audience confident that most will understand though at different levels of sophistication. In mathematics by contrast only slight variations in knowledge can result in an either clearer understanding or a total breakdown of communication. Hajnal maintains that it is in those subjects that contain most 'formal' knowledge that special teaching at low levels in high level institutions is necessary. He also contends that 'formal' knowledge has an esoteric, prestigious quality, causing a tendency for other disciplines to try to transfer knowledge into this category—a tendency particularly marked in the social sciences' emulation of the natural sciences. This has important implications for specialization. In so far as a discipline embodies 'formal' knowledge a long period of training may be necessary, suggesting a need for early dedication to the particular discipline.

Hajnal recommends various changes to overcome these problems, principally greater flexibility in choices and combinations of courses—a reform which he outlines in some detail, and with due consideration of its difficulties.

CHRISTOPHER J. HILL

Vocational Training in the EEC

by P. J. C. Perry

British Association for Commercial and Industrial Education, 1972, 123 pp., members £3, non-members £6

Those who are most likely to read the review columns in an educational journal might feel inclined to turn their backs on a book on training. In the case of *Vocational Training in the EEC* they should think twice before doing so. Here, in a brief space of 123 pages, is packed a mine of information on key issues in vocational training and their implications for UK policy and practice, including education in the EEC. Topics covered include: EEC policy on Vocational Training; Vocational Guidance; Harmonization of Qualifications; Exchange of Young Workers, among others.

The relevance of developments in these areas will not be lost on anyone who is interested in community education schemes which have aspirations beyond these shores.

The book is a report of a joint delegation from the British Association for Commercial and Industrial Education, the Institute of Personnel Management, and the Institution of Training Officers to the EEC in June 1972. There are separate sections reporting visits to France, West Germany, Italy, the Netherlands and Belgium. Included in the book are a couple of dozen useful appendices and an effective seven-page index covering the main text.

BRYAN MOORE

The Sociology of Education: An introduction

by Ivor Morrish

Unwin Education Books, 1972, 291 pp., £3·95, paperback £1·95

A number of books have been published with the words 'Sociology of Education' in their title, but this one must surely win the prize for its extensive coverage and condensation. It does not focus on the structure and functioning of the school or the roles and relation of its members as have other texts. The 16 chapters of this book review the history and development of many topics that impinge upon education in its broadest sense. Indeed, their scope is reminiscent of a syllabus for students of education for the author draws upon the literature and interpretations of many different disciplines within the field of social science. This means that only scant attention can be given to the theories of many important writers. For example, apart from passing mentions, only two pages are devoted to Freud's ideas on personality in a chapter called 'The Self, Society and Education' and three pages to Bernstein's theories when 'Social Stratification and Education' are discussed. However, this compression is inevitable in any volume which like the present, covers so much ground in precis form.

Students will find this a good source book. The bibliographies given at the end of each chapter are excellent. This will prove a useful starting point for those whose appetite for educational theory and discussion are whetted as well as for others who wish to follow up the full context of some of the many quotes which are liberally scattered throughout the text.

J. M. Ross

The Principles of Genetic Epistemology

by Jean Piaget

Routledge & Kegan Paul, 1972, 98 pp., £1·50

'Knowledge cannot be conceived as predetermined either in the internal structures of the subject—they are due to an effective and continuous construction; or in the pre-existing characteristics of objects, since they are only known through the mediation of these structures . . .' (p. 14); or, in Kant's words, 'thoughts without content are empty, intuitions without concepts are blind'. Piaget's book contains a brief but interesting discussion of the interrelation between knowing subject and known object, and more particularly of the methodology appropriate for examination of this interrelation: that is, of 'genetic' methodology.

The book is heavy going for those not used to the proliferation of abstract terms which is common to continental philosophers, and which the translation does little to diminish. Within its style, it is clearly written; but most Anglo-Saxon philosophers would believe that the multiplication of abstracts creates more problems than it solves. In particular there are two standard pieces of criticism to be levelled:

(1) First, Piaget is unclear about the distinction between conceptual and empirical questions, and about the nature of the former. As Hamlyn has pointed out in an article[1] which should be essential reading for all concerned with this general topic, not all questions about the acquisition of knowledge are empirical. I cannot—*logically* cannot—understand certain concepts (check-mate) before grasping certain others (king, check). This is a conceptual point, to which empirical research is irrelevant: and it is a point which bears strongly on a great deal of Piagetian and post-Piagetian research. The 'genetic' story of our acquisition of knowledge must be told partly in strictly logical or conceptual terms.

(2) Secondly, and perhaps more relevantly to educational researchers, Piaget has missed the basic importance of the work of Hirst and others on the (logically) different forms of human understanding. Partly through his own concentration on mathematical and scientific thinking, he is inclined to regard 'the development of knowledge' as a unitary whole: as if the *same* concepts and procedures (and hence the same 'development') applied throughout. But, as soon as we distinguish between (say) knowledge of numerical and spatial relationships, knowledge of human intentions, knowledge of one's own and other people's emotions, and so on, it becomes clear that we can only successfully trace any 'development' by tracing it *within* these particular structures. The structure is, in each case, partly given by the form of thought or type of knowledge itself; and one would have to begin by a conceptual analysis of this structure, before one could perceive clearly what the relevant empirical facts were. In a way, this second criticism is a special case of the criticism in (1) above.

This is not to say that the book is totally vitiated by Piaget's failure to perceive these points; indeed, in a way, he does perceive them—and it may be that his 'abstract' style of thought, rather than lack of awareness, accounts for their omission. There is much in the book to set the philosophical psychologist, or the psychologically-orientated philosopher, thinking hard: and, at a time when research requires hard thinking more than the frenzied collection of data, this is far from unimportant.

John Wilson

Social Psychology of Teaching

edited by A. Morrison and D. McIntyre

Penguin Modern Psychology Readings, 1972, 367 pp., 60p

This is a very useful book because it binds together various papers which previously had a joint existence only in the collections of photo-

---

[1] D. W. Hamlyn, 'The logical and psychological aspects of learning' John Wilson in *The Concept of Education* (Ed. R. S. Peters), RKP, 1967.

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copies made for their students by tutors in colleges and departments of education. The first papers describe theoretical approaches to the social-psychological study of teaching, and these are followed by papers which describe some ways of carrying out empirical work in the area. The remaining sections give some findings from studies of teacher education and teachers' behaviour on the job. Most of the papers are abridged from the original books or journal articles and two of them are specially re-written for this volume by their authors. The result is a collection of readable and informative articles. Each gives to the reader ways of organizing his thoughts about what goes on in classrooms and ways of teasing out some of the relationships between teachers' cognitive, perceptual and behavioural styles, and the responses of their pupils.

But the editors have done little to add to the merits of the separate papers. We are told in the introduction that teaching is 'intriguing . . . hard to describe . . . complex and often subtle' and that social psychology has offered powerful ways of making clear what teaching involves and how it can be researched. But then, of the three theoretical papers offered, one deals with 'interaction techniques' and the other with 'teaching skills', and it is difficult to see these as distinct theoretical approaches though of course they do differ in their levels of specificity. In the second section on 'Methods of Study', it is mostly observational methods which are described and the editors do not explain how these methods, or how the later papers which report empirical work, relate to or derive from the theoretical approaches described in the first section.

The introduction does say that certain individual papers may be difficult and that it would be helpful to study these under the guidance of experts but this could be said of any set of readings and is less of a problem for the reader than the difficulty of trying to match the papers to the frameworks given in the first section and to see the social psychology of teaching in an organized way.

These criticisms are not intended to detract from the value of the book as a collection of important and interesting papers. But the editors' introductions to them add little, and this is a pity since one of the ways in which an edition of readings differs from a collection of references is that in the former there is an editor with, usually, something helpful to say.

M. Cameron-Jones

Educational Environment and Student Achievement

by J. P. Keeves

Stockholm: Almqvist and Wiksell, 1972, 311 pp.

'Scientific method', as taught in our new school science curricula, contains carefully constructed experiments in which the effects of manipulating a single variable can be studied. Neither the experimental structure nor the isolated manipulation of single variables can easily be achieved in the educational field, and this has led to much recent debate over the scientific status of educational research. Experiment is usually replaced by a 'survey' of existing variations. The difficulty in such research lies in teasing out appropriate causal inferences from the observed data. Frequently no inferences as to cause and effect can be justified.

For example, a survey of children in English secondary schools might well yield data which suggest that girls like to study mathematics more when taught in mixed classes than in classes of girls alone. It would be dangerous however to deduce that the variations in attitude were caused by the sex composition of the class. We know that mixed classes are more likely to have well-qualified teachers; that the mathematics teachers of mixed classes are more likely to be men; that single-sex schools and mixed schools differ in many other ways. Many alternative 'cause-effect' hypotheses spring to mind, and the single relationship that we observed does not allow a clear choice between them.

More sophisticated statistical techniques have been developed to permit the analysis of complex relationships between more than two or three variables. These are known collectively as multivariate methods. The book here under review is subtitled: *A multivariate study of the contributions of the home, the school, and the peer group to change in mathematics and science performance during the first year at secondary school*. The author accepting that he can only sample the universe of influences actually at work, tries nevertheless to obtain sufficient data to give a reasonable representation. Two hundred and forty-two Australian students living in Canberra are the subject of this inquiry. Some hundreds of measures were obtained for each one. The book describes the gradual statistical refinement and grouping of these until the final causal regression analyses can be carried through.

One may well question whether a study of only 242 students could shed much light on such a broad research topic, especially if correlation-based statistical methods are to be used. However, it is clear that to conduct such a detailed study on a sample of say 20,000 students would be prohibitively expensive.

The results are frankly disappointing. No teacher would doubt that the educational environment and student achievement are strongly related. This study tells us very little more. Parental attitudes are shown to be important. So are the facilities provided for doing homework. Better trained teachers achieve better results. Beyond this, though, the results are too vague to be useful, and nothing emerges clearly from the plethora of cause-effect 'path' diagrams which are liberally sprinkled throughout the report.

For people intending to research complicated regions of social science this volume may well serve as a warning. Multiple regression was a procedure developed for prediction not explanation, and this study confirms its limitations when applied to survey data. There is no doubt that we need special methods for analysing the effects of interrelated variables in educational research. Multiple regression does not appear to be the answer.

B. Choppin

Preschool Programmes for the Disadvantaged

Five experimental approaches to early childhood education

edited by Julien C. Stanley

The John Hopkins University Press, 203 pp., Limp £1·35, Cloth £3·25

The eight papers included in this book were contributions to the first annual Hyman Blumberg Symposium on Research in Early Childhood Education. Five of them describe different approaches to preschool education; three discuss some implications.

Bereiter and Weikart, in the two most clearly argued papers, are concerned with the evaluation of different types of programme and the factors accounting for their relative success. Both are critical of the stringent criteria by which preschool programmes are evaluated, but both attribute such successes as have been achieved to rather different sources. Bereiter points out that the successful programmes have been those which have taken an instructional approach but admits that there is no evidence to decide between such programmes. Weikart, on the other hand, because of the findings of the Ypsilanti project that three very different programmes were equally successful, at least initially, claims that the curriculum is important for the teacher rather than the child. The critical factor is the existence of an effective staff model, the two key elements of which are planning and supervision.

The setting by the staff of clear objectives is also stressed by McAfee in her description of the New Nursery School programme—a paper which is marred by a very confused presentation of results. Her main contribution is to stress the importance of relating work done in the preschool to the expectations of teachers in later stages of education. This theme is taken up by Todd Risley in suggesting what he calls survival training—that is training which will help children behave in a way which conforms to teachers' expectations, sitting quietly, obeying instructions, etc. He advocates the use of behaviour modification techniques to achieve desired goals whether in behaviour or production of spontaneous speech. As Beilin states in his discussion, however, one does have a sense that the development of techniques is more important than the objectives or curricula they are designed to implement.

Marion Blank's discussion of her treatment of personality variables, relates to the others only in as much as her ultimate concern is the production of cognitive development. Her description of individual tutorial methods with children showing personality difficulties is of great interest, but widescale implementation, as she readily admits, would involve practical difficulties in providing enough staff with appropriate training.

Of the discussants Beilin and Cazden are concerned with, preschool programmes as a whole and their comments on the symposium papers are more illustrative than central to their arguments. Beilin is particularly concerned lest the apparent failure of compensatory education to close the class gap should conceal the fact that it succeeds to a marked degree with about 25 per cent of disadvantaged children exposed to it. Cazden's emphasis is on the need for studies of what actually goes on in the classroom which can throw light on both the implementation of the curriculum models and the relation between process and product.

Overall, despite considerable variations in quality the book gives a useful picture of the range of current thinking on this topic in the U.S.A.

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November 1972 *Number 8*

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MANCHESTER UNIVERSITY PRESS

British Journal of Educational Psychology

(*Editor*: J. D. NISBET, Department of Education, University of Aberdeen, Scotland)

Vol. 43 Part 1 February 1973

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RESEARCH NOTES

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EDUCATIONAL RESEARCH

A review for teachers
and all concerned with
progress in education

The journal of the
National Foundation for
Educational Research
in England and Wales

Volume 15 No 3
June 1973

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In this issue:

EDUCATION AND CLASS

THE FUTURE ROLE OF THE NFER

THE GOAL STRUCTURE OF TEACHERS IN COMPREHENSIVE SCHOOLS

WRITTEN LANGUAGE AND THE SENSE OF AUDIENCE

EDUCATIONAL RESEARCH

Editor **ALFRED YATES** *assisted by* **GABRIEL CHANAN** *and* **MONICA TAYLOR**

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EDUCATIONAL RESEARCH

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Volume 15 No 3
June 1973

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It is desired to bring to the notice of subscribers a change in distribution arrangements for *Educational Research* to commence with the next volume, No. 16.

The Foundation has decided that its established subsidiary, NFER Publishing Company Ltd., should now assume responsibility for the full publishing and distribution requirements of the journal. By arrangement with the present distributors the transfer is to become effective by stages in readiness for the November issue.

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The Foundation wishes to express sincere thanks and appreciation to Messrs. King, Thorne & Stace Ltd., who, as long-standing printers of the journal, undertook the distribution arrangements until such time as alternative plans were convenient to the publishers.

THE FUTURE ROLE OF THE NFER

THE 1972 Annual General Meeting of the Foundation, held on 30th November at Grosvenor House, London, had as its subject the Foundation's future. For the information of readers, we are presenting here an edited selection of points from the address to the conference given by Mr Alfred Yates, the Foundation's Director, and in reply, an independent view by Professor Jack Wrigley, together with some questions and answers from an open forum of delegates which ended the session.

Director's Address

1. *Foundation's present activities*

Mr Yates began by summarizing the present range of the Foundation's activities; the primary aim was defined in the Statement of Policy[1] as 'the study and resolution of such practical problems arising within the public system of education as are amenable to scientific investigation either in whole or in part'. He continued, 'I think that this is and must remain our major concern. If we were to redraft this statement, however, I imagine that we should hesitate about the word "resolution". It seems to me that there was an excess of optimism around when it was suggested that applied research of the kind we indulge in could of itself resolve the practical problems that confront teachers and administrators. A more realistic formulation would define our role as that of contributing to the evidence available to those whose responsibility it is to frame policy and devise procedures for its implementation. The findings of empirical research can help to inform their judgement but do not provide a substitute for it.'

Activities complimentary to research were also catalogued:

(a) the dissemination of the results of NFER researches and others in various published forms: books, both technical and popular; the journal; and a news sheet to members; utilization of the press and other media and an exhibition.

(b) the Guidance and Assessment Service which develops and standardizes tests and advises on their administration and interpretation to authorities and teachers.

(c) the Statistical Service which advises members on research designs and techniques appropriate to research they want to carry out, processes data and analyses results.

(d) an agency for control and distribution of tests other than NFER tests, which adapts and restandardizes imported tests.

(e) lectures, courses and seminars and answering inquiries.

2. *Suggested additions and modifications*

Mr Yates proceeded to suggest some additions and modifications to this programme: 'Starting with the research division—our largest sector—I would strongly urge that in the interests of quality and effectiveness—and at the expense if necessary of the quantity of research that we undertake—we should be allowed to slow down the pace somewhat. We have tended to proceed at a frantic rate. We not uncommonly arrange for a research team to complete a project on, say, 31st December and to start the next on 1st January. They have become as a consequence, like actors in a provincial repertory company: whilst performing in one play they are expected to be busily rehearsing the next.

'In such a pattern of activity there is a missing dimension—that of reflection. I would hope that it might become accepted that between sizeable projects members of our research staff can be usefully employed in reviewing their own findings, relating them to those of other researchers in the same or related fields and considering their implications. They also require an opportunity for a comparable exercise before embarking on a new project. I have recommended this in the interests of quality—both the quality of the research we carry out and the quality of the lives of those who undertake it (I imagine that there is some correlation between the two)—and at the expense perhaps of quantity. But there is not necessarily any overall loss of production in what is being advocated.' Moreover, in order to prevent possible stereotyping of techniques, he urged that there should be more methodological research in research design, methods of analysis and the construction of tests, especially of a diagnostic kind. 'Instruments of evaluation are', he said, 'the tools of our trade, and no craftsman can be expected to continue to produce work of a high quality if he does not from time to time service the tools he employs and acquire fresh ones.'

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[1] Produced in 1953.

Whether the Foundation embarked on general practice or greater specialization was, in Mr Yates' view, secondary to the kind of research investigations needed by its members: '. . . if the Foundation is to develop a distinctive role in the research field I would accord pride of place to investigations which involve the evaluation of existing or projected procedures and practices. . . . Our constitutional position makes us uniquely fitted to undertake, on behalf of our members, corporately or individually, or on behalf of sponsors, enquiries which enable us to report on the observed consequences of, for example, particular forms of school organization or methods of teaching. . . . I envisage, under this head, not only large-scale investigations into the outcome of widespread and well-established procedures but also smaller, experimental studies of the interventionist type which allow some estimate to be formed of the effects of practices which have not been introduced on any sizeable scale.'

A distinction was drawn between fundamental and applied research: 'In the area of fundamental work it is proper that the initiative should come from the researchers themselves: indeed it would be absurd for sponsors or patrons to tell researchers what interests them and arouses their intellectual curiosity. It is almost equally absurd that, in the applied field, researchers should be expected to identify the problems that confront policy-makers, administrators and teachers. I would invite you therefore to address your attention to the problem of how a process of commissioning might be introduced and operated.' Moreover, it was suggested that teachers, lecturers and administrators could be seconded to the Foundation, say for a year, in order that researchers might have the benefit of first-hand acquaintance with their recent day-to-day activities. Conversely, there would be advantages to be derived by the visitor and the organization to which he returned.

3. *How research could expand*

Reminding the conference that NFER research had to be concerned with 'problems that arise within the public system of education', the Director turned to consider possible expansion of research activities. Firstly, however, he said '. . . There are some who are disposed to argue of course that although there are admittedly many practical problems to which research is relevant, the amount of research effort currently devoted to them is excessive. That there is too much research going on at the moment is a proposition that I regularly encounter . . . . This argument is difficult to sustain in relation to the amount of money devoted to this pursuit . . . . The most recent estimates show that the proportion of expenditure on the combined activities of research and development amount to only 0·13% of our total educational expenditure in England and Wales. And since half of it goes on development, this scarcely amounts to a research bonanza.

'One can readily understand, however, how the illusion—and I believe it to be an illusion—that there is far too much research going on, has arisen. Those concerned with reviewing the research within a given area or with the problems of information retrieval find themselves confronted with unmanageably long lists of titles. But on closer inspection it is often found that in many instances it is the titles only that are relevant to one's purposes.' Moreover, the enormous growth in recent years in the numbers of students who undertook research projects, not only for higher degrees, must have contributed to an impression of a super-abundance of research. But because of limitations placed upon them—e.g. pressure of time, inadequate samples, lack of financial resources—LEAs and schools had little return for the amount of time they invested. Mr Yates contended that '. . . for many of the students who are now required to involve themselves (and therefore, of course, teachers and children) in empirical research a more orthodox academic course would be better suited to their needs. It has been shown in the United States—and I doubt if different results would be found here—that fewer than one in ten of those who obtain research degrees indulge in any form of research activity once the award has been collected. Nor did they intend or wish to do so. If the object of the exercise from the student's point of view is to equip himself to become a headmaster or an administrator eventually, it is at least arguable that a narrow research exercise is not necessarily the most suitable form of preparation. I would argue further that the research degree as it is at present conceived is not the most adequate form of preparation for the minority who are intending to take up educational research as a full-time activity. A combination of apprentice-type attachments and a taught course involving a variety of simulation exercises could be much more satisfying and effective for this purpose.'

And in conclusion he said: 'There is a strong case, therefore, for either maintaining the Foundation at its present size or for entertaining the possibility of some expansion in the future. In this latter regard it would seem to be generally agreed by those most directly concerned with the conduct of the Foundation's affairs that the rapid rate of growth that was maintained during the sixties gave rise to problems that are still not adequately solved. My own recommendation would be, therefore, that we remain on our present plateau long enough to get our breath back and that any future expansion should be carefully planned, related to an ascertained need, and carried through without indecent haste.'

An Independent View by Professor Jack Wrigley

Professor Wrigley related the past and future problems of the NFER to the difficulties inherent in the nature of educational research itself: that educational research is hard and that influential people do not take it seriously. 'Educational research', he said, 'is always like this; people seem to differ on the importance of a research topic, the appropriate methodology, the meaning and importance of the results, and the implications for policy. Perhaps educational research is different from other branches of scientific research in this respect or perhaps not; maybe similar controversies also occur in more orthodox scientific research. Educational research has never had the kind of prestige ascribed to research in the pure sciences. I think this situation may be changing for the future but even then, alas, the main reason for the change may not be that educational research will have its prestige enhanced but rather that we have become more sceptical of the benefits to be derived from researches in the pure sciences. It is clear enough that in educational research there is always an interaction between the research itself and the implications of that research for policy. It is always very difficult to carry out educational research with true objectivity. The real life problem has always to be translated into research terms and in doing this inevitable and essential translation it is easy to narrow the problem too much, so that what was an important issue has been transformed into a narrow and pedantic piece of research. The art of good educational research is certainly in the asking of the right questions, but also in the translation of those questions into viable and sensible research.'

Since it was often difficult to discern the true facts from research, and also because of the shortage of good researchers, he continued, 'I would suggest that those people responsible for policy in this country on the whole have a profound lack of faith in educational research, and if that's true it's easy to see that those very same people might have an equal lack of faith in a Foundation whose main work is dedicated to the prosecution of educational research. So the Foundation has a tough task, and the task has become perhaps more difficult, though the opportunities are greater, in the last few years. In the last ten years there certainly has been more initial interest in educational research in this country than ever before. The Department of Education and Science has really gone through a rapid change of view on educational research, beginning with a renewed interest, and even enthusiasm, sponsoring quite a number of researches seven to eight years ago, rapidly moving to scepticism and disappointment from the results of that research, and perhaps moving on to a new hope that its own planning department may be able to produce more valid research and more useful research from its own point of view. . . . Although there has been more money for educational research in the last decade there has also been more competition for that money, and there has been the rise of new institutions, so that the NFER has in some ways to compete as never before.'

Looking ahead to the future, Professor Wrigley stressed the importance of securing well-qualified researchers: 'It is necessary for the staff to be given the opportunity to think. The ability to ask the right questions is an essential attribute of the able researcher, so it is important for the staff to be given this kind of opportunity. To get good educational research from an institution like the NFER it is necessary to engender in the staff a relaxed, enlightened attitude, and a relaxed environment and atmosphere in the institution. The kind of atmosphere I am talking about is the kind which would be seen in a good university. Indeed, my second point is that it seems to me that it would be of great importance for the NFER to have close associations with local universities. Reciprocal arrangements with a university would have many advantages. It's a hard thing to continue to do educational research for the whole of one's career, and the orthodox university view in which teaching and research take place together or one alternates with the other is still a very important idea. If good co-operation with a university were established then the staff of the Foundation could be encouraged to work for higher degrees in a university, they could take part in some of the university teaching and some of the university research workers, both students and staff, but particularly students, could be encouraged to work at the Foundation for a period of time—a kind of sandwich course. . . .'

In addition, it was suggested that the NFER needed to persuade the various funding agencies to give them a more secure budget, both for long-term programmes of research and projects. 'But money is one thing', he commented 'what is really needed is the production of better research designs, more stimulating and fruitful questions, and the spending of more time on changing those questions into viable research techniques. . . . I would suggest that it is important not to over-sophisticate one's techniques. Britain has a long tradition in the development of psychometrics. We have had some extremely talented research workers in this country—Galton, Spearman, Thomson, Burt, Vernon, Warburton and Wiseman, to name a few. It's a dangerous thing to say that the techniques which may have been advocated and developed should be simplified, and I say it in a cautious way, fully conscious of the fact that what I say could be misinterpreted. But the plain fact is that our original data are often rough and inaccurate. We would be better occupied in putting more effort into making sure that we have results worth analysing, rather than in the elegance of the research design. Similarly, I would suggest that perhaps the most sophisticated technique of all—factor analysis—should be used very sparingly.'

Finally, in Professor Wrigley's opinion '. . . research and development and policy are always intermingled. It's indeed extremely important to separate out the research issues from the policy issues, but it is a mistake to think that the research itself can ever be purely objective and can ever be conducted without policy issues in mind. What one can attempt to do is to make it clear where the value judgements lie, how they impinge upon the research, and to separate out the issues as clearly as possible.'

Views of Members in the Open Forum

Mr Dudley Fiske, as Chairman, opened the session:

'. . . I think it's a true analysis that Professor Wrigley made that there is a good deal of ignoring of the findings of educational research, both by practitioners in the classroom and by practitioners in authorities making policy. I would suggest that there are probably three reasons for this:

'Firstly, the practitioner, and certainly the administrator and the elected member in the authority, tends to raise the problem and pass it over to research as a short-term problem, tends to want an answer pretty quickly, while educational research by its nature is not able to be a problem-solving technique in the short-term. It is a long-term business by its very nature. Both the authorities and the teachers tend to get rather impatient of waiting, and indeed can't wait, because the children are here to be taught today; and although I would never claim that authorities make decisions on every problem today, they do tend to deal with them rather more quickly perhaps than the findings of educational research will come along.

'Secondly, quite often when you do get the results, though they may be very respectable academically, they tend to look a bit neutral; they tend to be a bit non-committal, they tend, in unkind layman's language, to be saying "Well, yes, we recognize that you've got a problem but we don't actually know how you can solve it." Now I accept what Mr Yates said at the beginning: that it is perhaps misleading to think that the Foundation ought to set out to *resolve* such practical problems. But for those of us who do have to take decisions of some kind and who find ourselves very often in the position where to take no decision at all is the worst of all courses of action, one must say that sometimes the findings of the research in the end don't seem very much help; they are shoulder-shrugging in the most respectable way, and say that any of the various courses that you take, or even that you might take could be wrong, without being able to tell you that a particular course is less likely to be wrong than others.

'And finally, it seems that rather too often when the findings of research are not too non-committal they are saying, "though we cannot tell you what you should do in the future, we can certainly tell you that what you have been doing in the past, and what you are doing now is quite wrong". There are quite a lot of examples of this, and if you are going to be told by a group of people, whatever they call themselves, that what you have been doing in the past is wrong, what you are doing in the present is wrong, but they can't really tell you what you ought to be doing in the future, it may well be self-defensive but you are perhaps going to be inclined to ignore their findings.'

Mr Yates took up these points: 'When you talk about referring problems to us, you are, or ought to be, referring only *part* of the problem to us. The problem that confronts you involves you in, for example, making value judgements. The sort of question you have to decide is: "Is it best for the children of Manchester or wherever that we should adopt this particular procedure?". Now we ought not to answer that question as it stands. Who are we to say what is best or right for the children of Manchester? All we can do is to take that problem and abstract from it the sorts of thing that we can give you some answer about. We can, for example, say "If you adopt procedure X this will be the consequence; if you adopt procedure Y that will be the consequence". Then we can pass it back to you—quite properly I think—for you to say "All right, knowing what this prediction is, it's now for us to make this hard decision, and bring in all sorts of other considerations". It's nothing to do with us as to what it costs, for example.

'But on your second point, about our saying "there isn't much difference between A and B as far as we can see"—that could conceivably be quite useful to you. "A" might be extremely expensive and "B" could be done on the cheap; and if we can tell you that in terms of educational outcome there is no significant difference, surely it's a matter of some comfort to you to know that it's quite in order for you to save the ratepayer's money, the cheaper alternative being just as effective as the dearer. You can't pass on your problems to us—there has to be some dialogue between us. When I talked about being commissioned, I wasn't suggesting that you give us a package and we hand it back; before the commissioning there has to be a dialogue in which you tell us what your problems are, and we say "Well, that bit of it perhaps we could inquire into along these lines", and you say, "Yes that might be helpful". Then we do that, pass it to you, and we have a further dialogue saying to you tentatively what we think the implications of our piece of research are. But still you have to add in all your other considerations before you can frame your policy. I'm claiming a pretty humble role for educational research but one that can be distinctly helpful to the administrator.'

Mr Taylor, from Leeds, was not quite clear what was meant by 'commissioning' and how it worked: 'Do commissions come from grass roots members? How does the Foundation decide that topics are either relevant or worthwhile? What are the mechanics of commissioning—has moving to scepticism and disappointment from the results of that research, and perhaps moving on to a new hope that its own planning department may be able to produce more valid research and more useful research from its own point of view. . . . Although there has been more money for educational research in the last decade there has also been more competition for that money, and there has been the rise of new institutions, so that the NFER has in some ways to compete as never before.'

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Mr Yates: 'My feeling is that too much initiative is probably left to us in the nature of things; that we try to guess what are the priorities—what are the most important problems for us to tackle. But we certainly don't decide that we shall do the research. It would be useful if we could have more liaison, more dialogue, with those who are at the coal face, the ones who really know what's bothering them, rather than that we should guess at it.'

Mrs Hitchcock, from a college of education in Northampton, made a plea for researchers to make explicit their own value judgements, whether about education or psychology, when reporting a piece of research, since without this it was impossible for practitioners themselves to judge what weight to give to the findings.

Mr Barnes, from Salford, suggested that a monitoring system should be set up between NFER and teachers' centres, to find out directly from teachers what current problems had arisen that might be amenable to research.

Mr Britton of the NUT claimed that at this time 'there is more change going on than there has ever been' and he felt that the NFER should not stand aside, but should shoulder its share of 'the terrific pressure that exists in the whole of the education system. The NFER has got no future if it just does the sort of research that a university could do. The future of the NFER, the whole basis of the NFER, is that it is closely allied to the problems that are existent at this moment in the schools, either looked at from the point of view of the teacher or from the point of view of the local authorities whose job it is to organize the schools. . . . Isn't it inherent in the very nature of the Foundation's existence that they will be subjected to these terrific pressures of not being able to do any one job ideally, but to being able to do a whole lot of jobs as best we can?'

Mr Yates, replying, said that given a certain financial backing, and the alternative of running 16 projects unsatisfactorily or 14 more satisfactorily, he would certainly opt for the latter. Because of the pressure of time, the absurd situation had arisen whereby researchers in a particular field were less well informed about other research going on in that field than other people outside it, due to the preoccupation with their own work which became necessary. The quality of their proposals for subsequent research would obviously improve if there was time for reflection about the field as a whole.

Mr Harris, Chairman of Gloucester City Education Committee, stressed the need for follow-up studies so that where a problem had been identified in an area of research—say multiracial education—there should be a second stage where possible solutions to the various problems in LEAs could be explored. Administrators could then consider their applicability to their own particular areas. 'Educational research', Mr Yates agreed 'has suffered from the tendency to set up projects which last for a year or two, and then one's done that and one passes on to something else. What we need are ongoing programmes in particular areas so that there is an opportunity to look at what loose ends have been left by the first stage, and to look at what fresh ideas have been thrown up for new research in the first stage, and have the opportunity to carry them on and round off the story.'

Taking up a point in the Director's address about secondment of teachers to NFER, Miss Wood, Assistant Secretary of the Association of Assistant Mistresses, wondered in what ways teachers could become more knowledgeable about research, or associated with projects; perhaps teachers might assist in locally sponsored research directed by NFER researchers. Were there other ways in which people who wanted to learn more about research could be associated with the work of the Foundation which would enable their influence to be dissemminated further and the research to be more valuable to more people?

An enormous amount of teacher help was already utilized, Mr Yates said, and in conclusion he clarified his earlier statement on secondment: this was not just to be the means of teaching people about research but 'I was rather suggesting that the people seconded and spending a year with us could bring a lot of relevant expertise and experience into the Foundation from which we could benefit. One thinks especially of test construction. It was certainly a *mutual* benefit I had in mind.'

EDUCATIONAL RESEARCH

A review for teachers
and all concerned with
progress in education

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WRITTEN LANGUAGE AND THE SENSE OF AUDIENCE

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THIS THEORETICAL discussion and model are early fruits of the Schools Council Writing Research Project, which has studied the development of writing ability in the age group 11 to 18. The major results are yet to be published. The model presented below, which seeks to distinguish various types of audience-orientation in pupils when they are engaged on a piece of written work, and another model which sets out function categories (Britton, 1971), are of interest in themselves. Apart from the use which other researchers may wish to make of them, teachers will find here a proposed new way of understanding their pupils' written work, and of how writing tasks in school are influenced by the sense of audience. The theory lying behind this model, which occupies the first part of the article, has wide implications for all forms of written communication.

A young child will adapt his speech to his sense of the person he is addressing, either bowing to imposed constraints or recognizing and meeting some need in the other person. Thus he might refrain from addressing an uncle by his first name because it is explicitly forbidden to do so, or he might simplify his speech grammatically and lexically because his younger brother would otherwise not understand it. But when children begin to write, this process of adjusting to their audience presents them with new problems even though they may fail to recognize them. I want to suggest that one important dimension of development in writing ability is the growth of a *sense of audience*, the growth of the ability to make adjustments and choices in writing which take account of the audience for whom it is intended. This accommodation may be coarse or fine, highly calculated or totally intuitive, diffused through the text or explicit at particular points in it, but whatever the form of its realization, a highly developed sense of audience must be one of the marks of the competent mature writer, for it is concerned with nothing less than the implementation of his concern to maintain or establish an appropriate relationship with his reader in order to achieve his full intent.

Before we proceed to an outline of the model which we propose for charting this development we must undertake some exploration of the concept 'sense of audience'. After having done so we shall look at its operation in the specific context of school writing.

Writing may be looked upon as soliloquizing monologue. This way of looking at it seems reasonable enough. The 'others' are not there, they cannot interrupt and who they are and what they are do not make themselves insistently felt at every turn. The writer need not retract, concede, bluff, cajole, placate, counter-attack, deny nor acknowledge directions and fancies which are not his own. Writing, then, appears to emancipate the writer not only from the fragmentation or disruption of his discourse by the intrusion of others but also from the acknowledgement of the fact that he must accommodate to the needs of others.

Yet while we may perceive some truth in all this, we also know it to be an absurdly inadequate description of what writers do, indeed must do. In spite of the fact that they are physically isolated from their audiences the act of writing inserts itself into a network of social relationships which will make the writer say this rather than that, in

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this way rather than that or perhaps to suppress this and add that. An invisible audience will exert some degree of control on his writing, impelling him towards choices along every dimension of language. There are some circumstances in which this is so obvious that we need not linger on them. What we would like to call *conative* writing would be a case in point: i.e. a writer setting out to convince his readers to change their beliefs, attitudes or behaviour must represent to himself their present posture. A letter-writer will make choices which take into account not only his status-relationship with the addressee but also, so far as he is able, what conventionalized formulaic repertoire is available for expressing this relationship (Dear Sir, or Mr Smith, or Smith, or Joe or Joe Smith). A scholar at home in the intricacies of his field will in a popularizing article be under considerable compulsion to simplify, to explain and to make certain assumptions explicit. And so on. These are all examples in which the writer will have a lively representation of his audience in mind or, if he does not, he will fail in his intent of which he will be likely to be highly aware. In such cases it is a relatively easy matter to detect the influences that the audience has had on a particular piece of writing, or at least some of them. In the same way in the conversation game one of the players can act with fully planned intent, having decided 'to butter someone up' or 'to keep someone in his place' or 'to create a good impression' or 'to show I'm not a snob'.

How does a writer enter into contact with his audience whom he may not know or not know very much about? Here we must face up to a difficulty which is relevant to the problem which we shall face later (the specifically educational aspect of the sense of audience). The bulk of writing in our society is of a professional or quasi-professional nature. The practitioners are, in part, aided by the conventions, practices and 'house-style' of the agency for whom they write and by their experience of public communication in general. This would also hold true for internal documents which circulate in large organizations like industrial enterprises, the civil service, etc. Writers in this situation need never have pondered the problem of audience; they have merely, so to speak, to serve their apprenticeship. They adjust themselves to the ground rules. On the other hand it is true that in one issue of a journal the contributors may display varying capacities or degrees of willingness to adjust to their common audience. All speakers go beyond the conventional devices provided by the language (levels of formality, politeness rituals, status-acknowledgement formulae, etc.) because of their sensitivity to the feelings, attitudes and knowledge of others and their ability to divine what has been thought rather than expressed. In the same way writers may follow their own personal sense of audience and even ignore established conventions. We may say then that sense of audience is well-provided for in the written language but that each writer must learn the system and must also learn how to make individual use of it.

Professional writing in general is addressed to a wide unknown audience but there are kinds of writing which are addressed to very different kinds of audience which may be very limited in number, be personally known to the writer and with whom he shares a special relationship. We therefore need to establish a set of writer-reader relationships which cover the whole possible range even though one of these relationships dominates published material.

Since the time of Aristotle the studied adjustment of discourse to its audience has been a major concern in rhetoric. In 1776 Campbell elaborated this attention to audience in two chapters entitled, 'of the Consideration which the Speaker ought to have of the Hearers, as men in general' and '. . . as such men in particular' and proposed that the speaker should consider how to shape his language to allow for the level of understanding, the imagination, the memory and the passions of the audience. Rhetoric was an educational programme preoccupied with prescriptions of how speakers (and later, writers) *should* take their audiences into account, suggesting in the manuals what devices might be resorted to and what tactics should be adopted. Much, perhaps most, discourse is not the product of manifest intent nor do its authors operate with a vast array of rules inculcated by an explicit specialist training. Although the rhetoricians taught us that the audience contributes to the discourse, we now have to go much further than them and observe that adjustment to the audience is inherent in the social contract of all language use. Thus we do not learn our mother tongue and then follow this basic training with a course on audience rhetoric: the two run concurrently and are central to socialization in general. In speech we can rely on society to make a fairly good job of it. There are immediate penalties for ignoring the audience. The speaker runs into more serious trouble when he has to adjust to an audience with whose needs he is unfamiliar or whose demands he has not been taught by life to meet. Within his own linguistic community the speaker can develop a delicate sense of audience; outside it he can run into difficulty. As Gumpertz (1962) points out, 'the linguistic community . . . (is) held together by the frequency of social interaction patterns and set off from the surrounding areas by weaknesses in the lines of communication'.

A writer has options open to him. Seen as someone engaged not simply in producing discourse which is intelligible and satisfying to himself, he becomes the performer of a social act in the arena of 'context of situation' (Malinowski, 1923; Firth, 1935; Halliday, 1971). The effect of 'context of situation'[1] on speakers is readily apparent. We can detect without difficulty some of the ways in which they are influenced by the circumstance or time, place and possibly accompanying activities. At the centre of the situation will be the other participant or participants also being affected by the other features of the 'context' of situation. We might think of the headmaster addressing a morning assembly and construct for ourselves a model of how this general notion operates in a specific situation.

To this we can add that the speaker and his listener(s) are not hermetically sealed in their context but operating within the whole culture of their society. In fact we have taken as the major premise of our work on function that for language to function effectively there must be 'tacit acceptance by both speaker and hearer of all the relevant conventions, beliefs and presuppositions' (Lyons 1963).

But this picture is an idealized one and leaves out of account several features which loom large in the light of our preoccupations with writing rather than speech and one particular context, namely school. To the latter point we shall return. For the moment let us say that writers will differ greatly in the extent to which they are justified in making 'tacit assumptions' and in their capacity to write in a way that accommodates these assumptions. In the context of situation the hearer is sharply in focus and indeed in most cases is likely to appear to the speaker as the major element, while for the writer this will not be true. The concept of 'context of situation' has been shaped very much with speakers in mind and needs to be modified for writers. For the writer, rather than the immediate environment it must consist of the universe of discourse he is entering (business letter, official document, short story), the situation of writing this kind of thing in this sort of society for this sort of person. The writer then must construe his audience on the basis of clues which are harder to come by since they are on a more generalized plane. To put it another way the writer does not, like the speaker, have the context of situation displayed before him, but must *represent to himself* a context of situation and this includes his readers.

Dell Hymes (1971) has insisted that in considering the linguistic development of children we need a broader view of what he calls 'communicative competence' which includes a knowledge not only of grammatical rules but also of 'speaking rules'. Some of these rules relate to addressor-addressee relationships which, he points out, begin to develop very early. He starts with the basic facts of social relationships rather than the basic facts of language. The communicative act grows out of this relationship and entails 'the selection and creation of communicative means considered specific and appropriate to it by the participants'. He suggests several areas for closer attention which do shed some light on our present concern. Firstly *self-identity* is crucial to the kind of differentiated linguistic competence required of the individual in contemporary industrial society. Thus he shows the paradox of audience adjustment revealed by a black mother who said,

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[1] 'The central concept of the whole of semantics considered in this way is the context of situation. In that context are the human participant or participants, what they say, and what is going on. The phonetician can find his phonetic context and the grammarian and the lexicographer theirs. And if you want to bring in general cultural background, you have the contexts of experience of the participants. Every man carries his culture and much of his social reality about with him wherever he goes. But even when phonetician, grammarian, and lexicographer have finished, there remains the bigger integration, making use of all their work, in semantic study. And it is for this situational and experimental study that I would reserve the term "semantics".' J. R. Firth (1935, page 27.)

'You know, I've noticed that when the children play "school" outside, they talk like they're supposed to in school; and when they stop playing school, they stop.'

Secondly, he developed the notion of *sociolinguistic interference*. 'When a child from one background enters a situation in which the communicative expectations are defined in terms of another' misunderstandings and misanalysis follow. In terms of audience we might see this most clearly displayed when the child moves from speaking to writing and perhaps again in the shift from the school exercise to the genuine communicative act. The ghost of the former audience is likely to haunt the new situation. Finally, Hymes sees that schools ask for special forms of communicative conduct (including writing) which bring with them their own hazards.

'Indeed, since the beginnings of stratified society and the use of writing, it has been characteristic of the greater part of mankind that a desired or required communicative competence has confronted man as an alien thing, imposed by a power not within his control. In the complex circumstances of our own society it is hard to see how children can be expected to master a second system, complementing or replacing their own, if the process is not perceived as intrinsically relevant or enjoyable, preferably both.'

What is it that the writer must do if he is to exercise 'communicative competence' in respect of his audience in the 'context of situation' peculiar to the writer-reader relationship? He must carry out a procedure of self-editing, of arresting, reorganizing and adjusting his message for his absent audience. He will be unable to do this unless he can *internalize* his audience. Mead (1934) suggested that this was an essential part of all thinking. The individual must be able to call out in himself the responses which his gestures evoke from others. He begins by being able to internalize individuals and finally internalizes a 'generalized other' who speaks for society at large. This must be close to what the mature writer has to do when he addresses a public audience. We may say then that a writer's capacity to adjust to his audience is dependent on the degree to which he can internalize that audience. Piaget (1969) showed how little the young child could do this because he 'has not like the adult the art of seeking and finding in the other's mind a basis on which to build anew'. And building anew is exactly what the full exercise of writing ability demands.

This is no place to examine the whole of role theory but inevitably having considered 'taking the role of the other' we must look at the role taken up by the writer. Insofar as a writer considers his audience to be in one role, his own role must be a complementary one. If he sees them as interested but uninformed laymen, he becomes the obliging expert. If they are seen as equals sharing a community of interest or concern he speaks as a peer. Furthermore we cannot rule out an element of role-playing (as distinct from role-taking) for a writer (particularly a school-pupil) might assume a role to which he has no acknowledged social claim either for the purpose of practice, humour, or deceit or simply because it is demanded of him. He then sets up a fictitious top-stratum relationship with his audience beneath which there lies another. A schoolboy, for example, may set out to act the politician and treat his audience as citizen-voters when in fact they are his fellows. Thus we conceived of the audience categories as a relationship between writer and reader.

The sense of audience in the school situation

Now let us look at the school situation and consider the application of our discussion to it. What is unique to this situation or more prevalent in it than is generally true?

The pupil operates within a context of culture which will exert an influence not only on the values he expresses but also on the ways in which he expresses them. It will also lead him to construe his audience (let us say, teachers) partly or wholly in the way in which his culture construes them. In some degree the pupil and teacher will share a common culture, but frequently there will be dramatic divergences, e.g. inner urban working-class pupil with parents from overseas and university trained, suburban middle-class teacher (see Goodacre, 1968). The messages which flow from pupil-writer to teacher-audience will be affected by the extent to which they share common cultural assumptions and also by the extent to which the pupil is aware of how matters stand. Thus the pupil-writer may construe his teacher-audience naively, crudely or with considerable astute sophistication. We need hardly add that the pupil's sense of audience in this situation will be strongly coloured by the teacher's attitude to cultural divergence (see Becker, 1952). The most vivid demonstration of the effect of 'context of culture' is the change which comes over adolescent pupils' writing when it is genuinely directed to a peer-audience. Our research has revealed how dramatic this change is.

If we look more closely at the 'context of situation' we see that almost all the writing with which we are concerned is in the school domain. The act of written communication in this domain is in many ways unlike other similar acts even when they are apparently identical. For example, a pupil may be asked to 'account for the collapse of the Roman Empire' or 'to describe the transport system of France', both undertakings which we might expect mature adult writers to engage in. In school, however, the context is one in which this undertaking will be taken to be an 'exercise', one of hundreds he will complete during his school career, the features of which he will learn as intimately as he learns the code of sanctions which his school operates. In this context he is likely to discriminate a variety of tasks (note-taking, summarizing, 'essays', etc.), but, whatever the task, his audience will overwhelmingly be predetermined and sharply defined, the teacher, a known audience of one.

Ideally one of the goals of schools is that they should, wherever this is possible, produce writers who have developed the capacity to generate their own reasons for writing and to define their own audiences which should include those which are large in number and unknown. In school, however, it is almost always the teacher who initiates the writing and who does so by defining a writing task with more or less explicitness. Not only does he define the task but also nominates himself as audience. He is not, however, simply a one-man audience but also the sole arbiter, appraisor, grader and judge of the performance. He becomes an audience on whom pupils must focus a special kind of scrutiny in order to detect what they must do to satisfy him. The peculiar feature of this relationship is that the pupil will see his teacher's response as a means by which his progress is being charted. It is part of a larger and more elaborate system of making judgements and not simply a question of the reader's pleasure or understanding or insight. Indeed the writer is frequently placed in the position of telling the reader what he already knows more fully and more deeply.

The fact that the pupil is subject to frequent demands for writing, some of which he finds distasteful or merely dull may lead to his sense of audience taking on a particular complexion. His writing may be dominated by the sole consideration of meeting *minimum* requirements. In other words it is shaped solely by the demands of his audience and not by the complementary pressure to formulate in a way which satisfies the writer. The analogy here is hack-writing and school becomes the writer's Grub Street. Readers will be aware that this sort of sense of audience can be finely tuned with arithmetic precision—the exact number of lines or pages.

We are well aware that other kinds of relationship exist between pupil and teacher and also that pupils frequently *are* concerned to satisfy themselves as well as their teacher-audience. We try to accommodate these possibilities in our scheme. However, our experience suggests that the teacher-as-audience dominates school writing. We are also aware that teachers often attempt to direct the sense of audience away from themselves by a variety of means. They may *specify another audience* (the readers of a newspaper, parents, a man from Mars, etc.). They may simply urge the pupil to *represent to himself* a general reader's difficulties of understanding or flow of sympathies or capacities for response. They may offer *stylistic advice* or *rhetorical precepts* which have a more general reader in mind, but this advice is not made explicit. But whatever strategy the teacher adopts it is difficult for him to elude the stubborn reality of himself as audience. Thus many pupil-writers have to operate a double-audience system which may give rise to particular tensions. Behind one audience stands the spectre of another.

This will not always be so, especially when the writer actually enjoys the language game being proposed to him. Moreover, a distinction should be made between the feigning required for some specific fictionalized audience and the gradual development both of the desire to reach out beyond the teacher and an awareness of how to do so. In other words the development of the pupil may be seen in terms of the move from 'the internalized other' (the teacher) to 'the generalized other' (the writer's unknown public).

Another way of looking at the teacher-as-audience is in terms of status. Normally in school the hierarchically ordered system will lead the writer not only to regard the teacher's demands as paramount but also as requiring a writing decorum which expresses the inferior status of the writer. The writer may reject his status by defying the rules of decorum. Similarly, a teacher may create a relationship which renounces his status and makes possible a different audience role. Whatever happens, the relative status of writer and reader will be set in terms of school relationships. The teacher's superior status is not marked out boldly like the ranks in the army and we can detect variations as between teachers and in one and the same teacher on different occasions. Similarly the role he takes up will vary; he may be instructor, collaborator, tester, wise adult or punitive arm. The pupil-writer may subtly accommodate to these different roles. Once again his maturity may well be marked by the development of the ability to abandon his inferior status and speak to adult peers.

Throughout his school career the pupil is provided with another source of awareness, his reading. From this he can learn strategies by means of which writers accommodate to their audiences (usually either the public at large or the school learner). This learning can be applied to any school writing but would be more readily drawn upon when the teacher encourages the pupil to direct himself to a more general audience.

It has been our assumption so far that all writing will be influenced by the writer's sense of audience. There is, perhaps, one exception. When writing is seen as a mere task and the writer is indifferent to the demands of the teacher, or when in desperation he is merely stringing sentences together, he may produce a piece in which it is not possible to discern a hint of sense of audience.

Classifying the sense of audience in school writing

We have by now given sufficient indication of the considerations which led us to attribute importance to the writer's sense of audience and of its general application to the school situation. We can now pass on to the model which we evolved by means of which we could allocate scripts to particular categories, and thus use this dimension in the classification of school writing. The model is displayed schematically below and followed by an explanatory text.

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Definition: The sense of audience is revealed by the manner in which the *writer* expresses *a relationship* with the *reader* in respect to his (the writer's) *undertaking*.

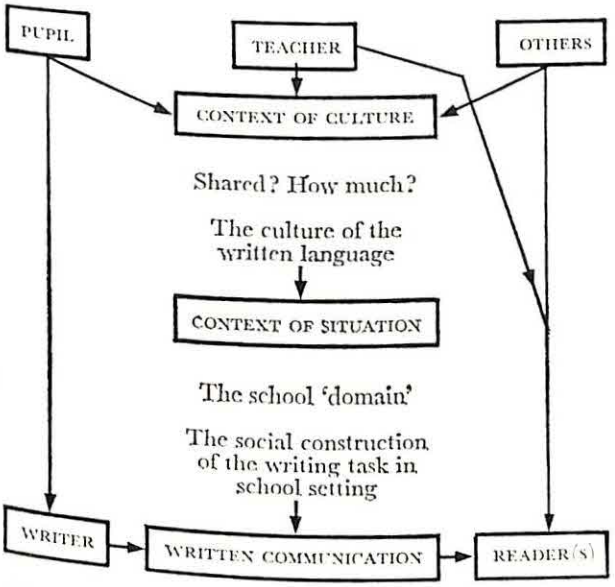
Main divisions: 1. SELF
2. TEACHER
3. WIDER AUDIENCE KNOWN
4. UNKNOWN

1. Self	1.1	Child (or adolescent) to self
2. TEACHER	2.1	Child (or adolescent) to trusted adult
	2.2.1	Pupil to teacher, general
	2.2.2	Pupil to teacher, particular relationship
	2.3	Pupil to examiner
3. WIDER AUDIENCE KNOWN	3.1	Expert to known laymen
	3.2	Child (or adolescent) to peer group
	3.3	Group member to working group (known audience which may include teacher)
4. UNKNOWN AUDIENCE	4.1	Writer to his readers (or his public)
5. ADDITIONAL CATEGORIES	5.1	Virtual named audience
	5.2	No discernible audience

Note (a). We have attempted to cover the full range of possible writing in school at the same time introducing special distinctions relevant to school writing. Most of the work we examine is inevitably assigned by the teacher and we would therefore expect most writing to fall in one of the subdivisions of 2.

Note (b). For reasons we have, we hope, made clear we wish to focus attention on the reader but since it is a relationship which we are classifying we have expressed it in terms of both *writer* and reader (e.g. 3.1 expert to known laymen). However, it is the second term, which refers to the reader, which is systematically varied. The first term names the general or usual complementary role of reader.

Figure 1: Diagrammatic representation of the sense of audience in a teacher-pupil situation



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(a) what is *set down* or explored is considered by the writer to be of no concern to anyone else; it might be mnemonic like a shopping list, record a stage in his thinking, or be preparatory to further activity including writing. Graphically it may be very different from conventional written language.

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Assigned tasks may sometimes move into this category 1 (Self), particularly in the circumstances of (c) above. Some notes are likely to move into this category where they may appear in two forms: (i) a diary-form entry where the writer comments on something which has interested him, or (ii) preparatory notes for an assigned task. (Here the teacher conditions the task but is not in mind as an audience to this preparatory version.)

2.1 (Child to trusted adult) Only a mother understands the egocentric speech of the infant, and clearly the talking relationship with the mother is the general incentive that makes the infant talk. Transfer this to writing that can only go on because there is this teacher, this particular human being, who will understand what it is you are trying to say. It is writing that accepts an invitation because it comes from this particular person in whom there is confidence.

Because writing is a way of committing oneself, and because it is at first a difficult process, young children may rely upon the trusted adult reader in even the simplest piece of work. Later, the fact that this particular adult wants to hear *anything* you have to say may operate as a strong incentive, and a liberator; so that children who haven't written begin to do so simply because they now feel free to say what really matters (e.g. the black children's first pieces at 13 or so in Kohl's *36 Children*, 1972). And in more ordinary circumstances adolescents may rely on this relationship in order to write dispassionately or objectively or critically about their families, etc.

The shaping responses of the 'internalized other' can be less heeded (and hence less of a brake) when a writer relies on the understanding of a particular trusted reader (i.e. 2.1 has some affinity with 1.). Mead's distinction is relevant here, that between the generalized other and the internalized other.

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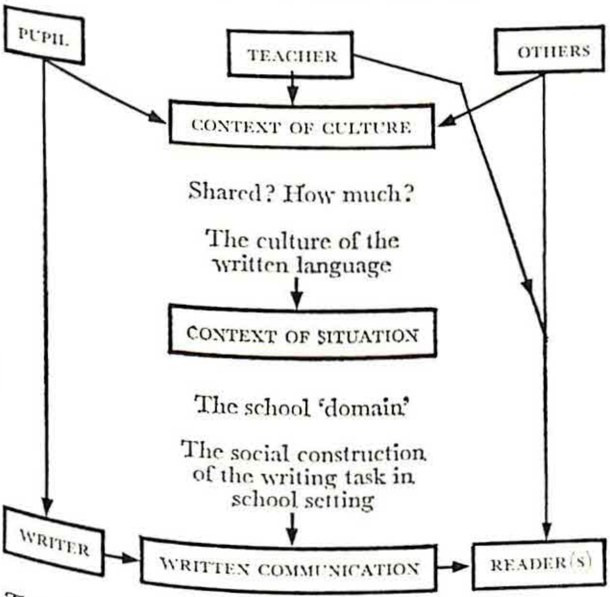

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Teachers are likely to vary very much in their understanding of this role and their willingness to assume it. (It has been suggested that where they have established such a relationship but betray it by reading work out to the whole class without prior permission, the writers lose some of their directness and begin to show off to the class. In our terms this would be a move from 2 to one form of 3.2).

We might speculate that examples of 1 among assigned tasks will crop up more frequently in classes where the teacher has established the 'trusted adult' relationship and tries to work within it a good deal.

A role for the English teacher only? Not at all. Speculation in even a specialized intellectual field may need to rely upon this relationship—though it may not be possible for a reader to discern the fact. Of course, writing about personal relations is more likely to rely on the trusted adult than is writing on impersonal matters, and this would favour work in English lessons.

Preparing to distinguish category 2.2 (Pupil to teacher) from this one, let us sum up category 2.1 as: 'My relationship with this particular adult provides me with an area in which I am free to operate, and I operate as myself.'

2.2 (Pupil to teacher) Here the adult represents an audience which is an object rather than an area of free operation and the object has its teacherly characteristics which affect one as writer.

Children may like or dislike, trust or mistrust teachers in general: the stereotype 'teacher' may often be what is felt as audience in category 2.2.

On the other hand particular teachers may be liked or disliked, trusted or mistrusted—and also known or (e.g. if he is a new teacher to the class) unknown. The particular teacher is likely to be there as an 'internalized other' in writing in this category. He may be a teacher who never takes the role described under category 2.1 or he may be a teacher who normally takes this role but on this occasion sets a task which is taken perhaps as rather more of a routine assignment, or more narrowly restricting as to area of concern. Thus the pupils may have a sense of audience which says 'We know what teachers in general expect of us, and to some extent how this particular representative embodies those expectations. This is our attempt to meet it.'

Distinguishing (2.2) 'pupil to teacher' from (2.3) 'pupil to examiner'

It is fairly widely assumed that, among many things teachers do, their teaching function can be distinguished from their testing function. It is this distinction that we want to apply in defining 'pupil to teacher' as a different audience category from 'pupil to examiner'. We shall have to clarify it as far as we can if it is to be of any use in allocating scripts.

The basic difference seems to be that between an ongoing process, an interaction between pupil and teacher, a continuing dialogue, on the one hand, and a show-up, a demonstration, an end-point on the other. In the teaching situation, a pupil looks, in his writing, to the response of the teacher and beyond that to his own activity to follow. He writes for a response, and therefore, a genuine question may be as appropriate as a statement; a suggestion that invites development may be as highly valued as a conclusion.

The test piece, on the other hand, is a culminating point rather than a stage in a process of interaction. (If candidates in the test situation ask questions, it will be because they are demonstrating their ability to frame the *right* or *approved* questions, rather than because they are seeking answers.)

A test may set out to measure what a pupil *can do* as well as what he *knows*, and here the teacher/examiner distinction may be more difficult to make. Thus:

(a) Suppose a teacher asks a first-year class to write a ballad, not as a test but as a piece of teaching. The poor performer may nevertheless find this an impossible task and his writing will show this. He cannot regard it as an 'invitation to be accepted' but only as a 'demand to be met'. It seems to us logical to regard this not as teacher directed (the teaching miscarried in this case) but as in the category 'pupil to examiner'.

(b) When a piece of writing seems to offer back what the pupil has received—a mirror to instruction—this would suggest 'pupil to examiner'. Where the writer seems to be *actively operating* within a task area this would suggest either (i) normally, pupil to teacher—especially where the writer tries to interest the reader or to write from his own interest; or (ii) occasionally, pupil to examiner, in the sense 'See how well I can operate!'

Where the pupil seems to be copying straight from a text book, or reproducing notes which the teacher has given him, the writing would suggest category 2.3 because the pupil has taken the 'teacher as examiner' as the audience for the task as a whole (though this may not further affect what he writes). Exercises in précis are likely to be of the form 'see how well I can operate'.

(c) The best exams in English may set out to test a candidate's ability to use language in optimum conditions, i.e. perhaps in circumstances modelled on the teacher-pupil dialogue. In such cases an actual exam may call forth writing which we should rightly classify as 'pupil to teacher'.

(d) In an exam (unknown audience) the writer may take up the task as his own (a writer to his public) or may, availing himself of anonymity, use the situation as a confessional.

(e) The 'mock exam' presents a special case: teaching is narrowly directed at improving performance in this 'show-up'. We suggest that only where the writing seems to be strongly influenced by the teaching relationship (the pupil-teacher dialogue) should it move out of the 'pupil to examiner' category.

Every interaction with someone else tells us something about that person; but in such cases what a teacher learns about a pupil leads not to a *verdict* but to further interaction. Can we distinguish writing aimed at a verdict from writing that is a link in a chain of interaction? The distinction being made is clearly not an organizational one but an educational one. There are many teachers whose teaching consists in leaping from test to test. Work produced in these circumstances is likely to go into category 2.3.

Distinguishing (2.2.1) 'teacher, general' from (2.2.2) 'teacher, particular relationship'.

As a child in the secondary school comes to know his teachers he is likely to develop a personal relationship with one or more of them: a relationship that is fed by his growing interest in the subject taught. When this happens the pupil gains confidence both in the teacher as a person and in his own ability to operate within the subject field—and this will be reflected in his writing for this *particular* teacher. It is therefore, like 2.1, a personal relationship but also, unlike 2.1, a 'professional' relationship, based upon a shared interest and expertise, an accumulating shared context.

In the course of teaching a class, a teacher is likely to build up a small group of pupils who hold such a relationship with him, and they may function as an élite group who form part of the audience felt by one of them in his writing. (*cf.* 3.2, but the role of the teacher here is more central).

3.1 Expert to layman

There is probably no need here to distinguish teacher as layman from any other layman or group of laymen.

Essentially the writer will have chosen his topic, or it will have been suggested to him as an individual, as an expert. The writing will be explicit down to the non-expert level: that is to say more of the context will be supplied and less implied than would have been the case where an expert wrote for fellow experts. (This will distinguish work in this category from work in the pupil-to-teacher category, where, however expert the writer may feel himself to be, he will assume that the teacher is even more of an expert.)

We shall probably have met writing of this kind in form magazines—in a 'hobbies section', to use the language of the Boys Own Paper era. It would not be substantially different, we think, when the teacher set an individually chosen or appropriately assigned 'hobbies' task.

Where a task of this kind has been mis-assigned, inappropriate for an individual, or the child has nothing in which he feels he can operate as an expert, the writing is likely to fall either into the pupil-to-teacher category (where he does his best to interest the teacher) or (in more desperate cases) into the pupil-to-examiner category. Where expertise is based on written sources we tend to move the writing into the writer-to-public category e.g. a piece on cosmetics takes up the manner of women's magazines or technical know-how may derive from manuals.

3.2 Child (or adolescent) to peer group

One of the things that good teachers do is to make children responsive to each other's efforts. (Probably in the best teaching this aim is subordinate to that of establishing a child-to-adult channel—but that is a matter of opinion, and certainly teachers will vary in what they set out to do.)

(a) Writing to the peer group is familiar to most of us from form magazines: sometimes here it suffers from a kind of precocity, a pseudo-journalistic style; sometimes from extreme banality. But the influence of the teacher can move it from this level without substituting himself for the peer group as audience. Or he may function rather as spectator and adviser or he may identify himself with the form's point of view and remain a member of the audience. A lot depends on genuine sense of freedom from censoring surveillance.

(b) Another situation will also produce writing in a related category; here the peer group is the 'hidden audience', aimed at via the teacher and despite him. The in-group joke will be a sign of it. But the effect of the hidden audience will have to *dominate* the writing (at the expense of the ostensible audience, the teacher) before a piece of work goes into this category.

3.3 Group member to group

The teacher is likely to be regarded as a member of the group; the writing is likely to be a link in a chain of group activity the past phases of which will be taken for granted as a part of the initial context. The audience is seen in this respect to be a known audience. There may be other indications of this fact in the way the writer appears to take into account the views and attitudes of individuals in the group—perhaps anticipating their particular difficulties or objections. Sometimes, though not always, what is offered will be seen to be *material for the group to work upon*—a contribution to an on-going activity.

This contribution to a joint undertaking ought usually to be distinguishable from the 'expert to layman' writing, but occasionally there may be a merging of the two—the joint undertaking may demand an expert's particular contribution.

4.1 Writer to his readers (unknown audience)

A writer who operates well in any of the categories will be in the first instance his own audience. We might expect that writing in which he functions minimally as his own audience is more likely to be in category 2.3 (pupil-to-examiner) than in any other: and that writing in this category is *least* likely to lead on to writing in category 4.1; it may also turn out that pupils who operate well in categories 1 (self) and 2.1 (child to adult) are *most* likely to produce examples of category 4.1.

The move from any other category to category 4.1 may be discernible as: (1) the writer's sense of the *general* value or validity of what he has to say; (2) his sense of the need to supply a context wide enough to bring in readers whose sophistication, interests, experiences he can only estimate; (3) a readiness to conform with and contribute to some cultural norm or trend; (4) a desire to achieve an effect, or make an impression on readers in general; (5) a sense that the writer's audience is not one with which he identifies himself in a personal way. (6) The familiarity with adult writing of the kind he is attempting which seems a satisfactory model to the writer. (These are intended to be signposts not the makings of a category definition.)

But other circumstances are likely to throw up poor work in category 4.1. Where there is a considerable gap between what a writer aims at and what he achieves, and where he is not aware of this gap, we might conjecture that he would be likely to produce naive or pretentious or tedious writing with a public audience in mind.

5. Additional categories

5.1 Virtual named audience

Sometimes children are asked to write a letter or address a piece of writing to a named person, or type of audience. In such cases, the writer may direct the piece towards the teacher, where it is likely to be a variety of Category 3a. But sometimes the writer may feel that the named person or audience is real to him, whereupon the writing may have an audience direction more akin to a personal letter than writing which has, as destination, the teacher. It would seem proper to distinguish these two cases.

In our sample, 5.1 is likely to be rare.

5.2 No discernible audience

Occasionally there are scripts which cannot be allocated to any category because there is no discernible audience. This category is not intended to be a dumping ground for difficult cases of decision. It is meant to include those cases where, for one reason or another, the writing has no audience direction. It should not be confused with Category 1 (see 1.1).

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NEW FROM METHUEN

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THE GOAL STRUCTURE OF TEACHERS IN COMPREHENSIVE SCHOOLS

DOUGLAS S. FINLAYSON *School of Education, University of Liverpool*

A NUMBER of statements of various analytically-derived output and support goals appropriate to secondary schools were submitted for evaluation, as ideal school goals, to a sample of teachers drawn from ten comprehensive schools. The teachers' top priorities were output goals referring to the balanced development of pupils' potentialities, interests and skills, and management goals referring to the regulation of social conflict within the organization, and social cohesion amongst the participation of the staff. Of relatively low priority are output goals reflecting a concern for the maintenance of the authority structure within and the economic needs of the wider society, and direct service to the community within which the school is set. Adaptation to the needs of that community and the maintenance of the status of the school are support goals which are also given relatively low priority.

Introduction

In much of the literature on the sociology of organization, it is maintained that it is the presence of a goal which marks off an organization from other kinds of systems (Parsons, 1956). Yet there has been remarkably little empirical research which had dealt systematically with the goals of schools. What work has been done with teachers' conceptions of their goals has dealt mainly with the priorities they give to the various kinds of educational aims (e.g. Musgrave and Taylor, 1969; Ashton, 1971).

In Gross' view, one of the reasons for this paucity of research has been that the study of organizations has suffered from an over-simplistic view of the concept of goal (Gross, 1969). He maintains that in any research work, attention must be given to both output and necessary support goals. Following the work of Bales with small discussion groups (Bales, 1958) he emphasizes that these latter kinds of goals, concerned as they are with the regulation of social tension amongst members of the organization, are no less important as constituting some of the 'means' whereby the 'ends' or output goals of the organization can be achieved: when a 'means' becomes an integral part of the functioning of an organization it can then be regarded as a goal of that organization. Hence, Gross argues, it is unrealistic to think of organizations as having only one goal. Most of them have many. In addition to having a number of 'support' goals, it could be said that most educational organizations are trying to achieve a number of 'output' goals. They are, for example, concerned not only with developing academic skills but with the social and emotional development of their pupils. In addition, schools are required to give regard to the expectations of the larger society in which they are located. For this reason, Gross maintains that the notion of 'goal structure' is preferable for the description of an organization's goals to the simple concept of goal.

To avoid reification of the concept of goal, it is necessary to emphasize that it is the individuals who occupy role positions either internal or external to organizations who have goals, not the organizations themselves. The notions that these

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individuals have of what they think the purposes of that organization are therefore, is one kind of evidence that can be brought forward to throw light on the nature of an organization's goal structure.

To say this, however, poses difficulties for the continued maintenance of any clear-cut distinction between output and support goals. The goals maintained for any school by individuals occupying different role positions can be very different according to whether they are pupils, teachers or parents (Schools Council Inquiry No. 1). Hence, it seems necessary to suggest that the distinction might be most appropriate when applied to the goal conceptions of teachers in schools. As members of staff in schools, they occupy roles which have associated with them legitimate expectations that they will both maintain their organization and pursue certain educational output goals. In this paper, therefore, only the goal conceptions of *teachers* are examined.

Procedure

The categorization employed by Gross (1968) in his examination of university goals was adopted for schools with one minor modification; research goals were omitted. According to his categorization, a number of distinctions were made within the broad headings of output and support goals:

1. *Output goals*

These are goals which are reflected in some product, service, skill or orientation. They can be subdivided as follows:

(a) student-expressive goals which are reflected in attempts to change the pupil's identity or character in some fundamental way;

(b) student-instrumental goals, which are reflected in an attempt to equip the pupil to operate in a specific way within society;

(c) direct service goals, which are reflected in the provision of services direct to the community outside the school.

2. *Support goals*

These are goals concerned with organizational maintenance, both internally and in relation to its environment. These are subdivided into:

(a) adaptation goals which are reflected in the need for the school to come to terms with its environment in order to secure resources and to satisfy the demands of organizations and individuals in that environment;

(b) management goals which are reflected in decisions about the running of the school, the handling of conflict and the establishment of priorities affecting output goals;

(c) motivation goals which seek to ensure the satisfaction of staff and pupils and emphasize loyalty to the school;

(d) position goals which serve to maintain the status of the school *vis-à-vis* other schools, and in the face of attempts or trends which could affect its position.

For each of these categories of goals, a number of items were designed. The content of the items was influenced by Gross' study (op.cit.), the list of objectives for comprehensive schools drawn up for the comprehensive schools feasibility study (Ross *et al.*, 1972), and much discussion with professional colleagues. The items were phrased as statements representing ideal goals[1] for secondary schools and randomized. The teachers were requested to estimate the degree of importance which they felt ought to be attached to each item. As many of the goals would be regarded as important, the wording which Gross used to describe each of the five response categories was adopted in order to secure an adequate spread of response. For each goal, the teachers were asked to say whether they regarded it as:

(a) of absolutely top importance;
(b) of great importance;
(c) of medium importance;
(d) of little importance;
(e) of no importance.

Each of these response categories was subsequently allocated a numerical score on a five-point scale.

The set of 51 items was submitted to a stratified random sample of teachers drawn from ten comprehensive schools. Included in the sampling frame were all the teachers in each of the schools who taught full time and who had been in the schools for more than two years. The teachers were allocated to the following categories: senior staff members, heads of departments, staff with pastoral responsibilities, minor posts of responsibility and assistant teachers. Five teachers were randomly selected from each status position in each school, giving a sample of 25 teachers/school. Two hundred and ten teachers completed the instrument out of a possible total 250. The teachers in the sample were contacted either in small groups arranged with the help of the heads of the schools or individually. In some cases these sessions took place during school time, in other cases, the groups met in the teachers' own time. The purpose of the research had already been explained in an individual letter addressed to each teacher in the sample. At the meetings this letter was referred to, and assurances of confidentiality were given. The teachers then completed the items in their own time.

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[1] A complete list of the goal statements included in each category is given in the appendix at the end of this paper.

The schools from which the samples were drawn were of various sizes and included schools from rural and urban areas. To secure a wide spread of difference between schools, general impressions were obtained from groups of HMI in various parts of the country about a considerable number of schools and the final selection was made from this list.

Results

Goal priorities

The mean score of each item was calculated and the items were arranged in order of general priority. They were then ranked into four quartiles and Table 1 shows the number of items in each of the goal categories which were found in each quartile. The pattern of priorities is quite clear.

The two sets of output goals relating to students are regarded by the teachers as the most important, the mode of each of their distributions occurring in the first quartile. Taking the student expressive goals first, the teachers feel it most important that schools should aim to produce well-rounded pupils in whom physical, social, moral, intellectual and aesthetic potentialities have all been equally cultivated, pupils who have a respect for others irrespective of their race, religion or views, pupils who are self-reliant, who have a respect for hard work and who have realised their artistic and creative potential. With regard to student instrumental goals, they feel it most important that pupils should be equipped with knowledge and skills to perform their responsibility as citizens effectively, should have adequate guidance in their choice of a future career, should have the transition from school to work facilitated for them and should be given interests and skills which will enable them to make adequate use of their leisure time.

The three expressive goals which fall into the bottom two quartiles concern the development in pupils of a respect for authority, the cultivation of pupils' intellect even at the expense of other considerations and teaching an agreed body of knowledge and set of skills rather than allowing pupils to pursue individual interests in the development of whatever potential they may

Table 1: No. of items/quartile

Goal Category		*Quartile*			
		1st (Top Priority)	2nd	3rd	4th (Least Priority)
Output Goals					
Student expressive	(10)	5	2	1	2
Student instrumental	(10)	4	3	2	1
Direct service	(5)	0	0	2	3
Support Goals					
Management	(13)	2	5	3	3
Motivation (pupils)	(3)	1	2	0	0
Motivation (teachers)	(3)	0	1	2	0
Adaption	(5)	0	0	2	3
Positional	(2)	0	0	1	1
Total	(51)	12	13	13	13

possess. The three lowest instrumental goals concern the encouragement of pupils to have an ambition to get on in life, to acquire skills appropriate to parenthood and to take up careers which are in line with the economic needs of the country.

The output goals relating to direct service all fall in the two bottom quartiles. The teachers in the sample give relatively low priority to assisting the local community by allowing the facilities of the school to be used by others when the school is not in session, by providing programmes of community service, or by providing cultural leadership through school-sponsored displays and productions, and to the preservation of the cultural heritage and to the dissemination of new ideas that might be expected to change society.

The support goals which have the highest priority after the pupil output goals are those concerned with managing the internal functioning of the school. The two most important goals of this kind are the encouragement of the staff to work as a team and the involvement of the staff in the running of a school. Inspection of the other relatively important functional management goals shows that they are mostly concerned with controlling the level of social tension amongst the staff, as for example, the reduction to a minimum of all obstacles to a teacher's work in school, the promotion of easy communication between staff at all levels, the encouragement of friendly relations between staff and pupils and the maintenance of harmony between sections of the school even when they do not agree on important matters. Management goals that might be regarded as reflecting a concern for efficiency, as exemplified in the goals of ensuring efficient supervision of the work of pupils and staff and the provision of clear terms of reference according to which the staff perform their duties, are given lower priority. Other management goals given low priority are—ensuring that allowances and privileges reflect the contribution made by the person involved to the functioning of the school and supporting the staff in the face of all external pressure. The management goal regarded of least importance is the involvement of parents in the running of the school. The motivation of pupils has a similar priority to that of functional management, with the motivation of teachers considered to be of less importance.

The remaining two support goals, relating to adaptation and the maintenance of the school's position are of relatively low importance in the eyes of the teachers. They are not particularly concerned, for example, with keeping costs as low as possible by efficient utilization of resources, co-operating to the full with the wishes of the LEA officials or seeking to retain staff in the face of inducements available at other schools, nor with increasing the prestige of their schools or with the preservation of the character of the school.

Discussion

This sample of teachers from comprehensive schools thus gives top priority to output or task goals concerned with the *all-round* development of the potentialities and abilities of their pupils and their general adjustment to society. Apart from goals referring specifically to the pupils' development, most of the top priority goals had the pupils' selves as their focus—they should be self-reliant and able to make decisions about their own work and leisure. Such a focus was not exclusive, however. Respect for individuals different from themselves and knowledge and skills appropriate to citizenship were goals which showed concern for the individuality of others. Conventional values relating to respect for authority, personal ambition, the economic needs of the country and the skills of parenthood were given relatively low priority. Such goals could be regarded as constraints on the development of individuality. It would be of considerable interest to ascertain if such relative priorities were characteristic of teachers in a more representative sample of comprehensive schools. Would the goals referring to respect for authority, personal ambition, national requirements and parenthood have the same low priority in a sample of the grammar school teachers? How do parents react to the priorities expressed by the comprehensive teachers?

Of the various kinds of support goals, those that are given the highest priority tend to be management goals which refer to harmonious interaction between members of the staff and the control of social tension. The relatively high value placed on the motivation of pupils could be interpreted as an extension of this concern for social harmony. This emphasis on organizational maintenance demonstrates the teachers' awareness of the complementary nature of such goals to output or task goals, a finding consistent with Bales' work which showed that both task and maintenance roles were performed by individuals in small discussion groups.

Of relatively low importance in the eyes of teachers are the school's relationship with the environment as these are specified in the direct service output goals and the adaptation support goals. Positional goals are also valued relatively lowly. It may be that such evaluations could be associated with the comparative isolation of many of the teachers from the community and from opportunities which bring them face to face with the expectations of either individuals or other organizations in the school's environment. Such contacts are frequently the concern of specialist appointments or of the head himself. If this comment is accepted as a tentative explanation of the low value placed on goals (for the school) which have as their focus individuals, groups or organizations external to the school, the finding raises important questions. Is such teacher isolation to be perpetuated? If it is not, how might it be reduced? Does such isolation reflect a lack of awareness on the part of teachers of the important consequences and constraints associated with a school's relationship with its environment?

To make explicit what teachers believe the goals of secondary schools ought to be is not, in itself, evidence about the organizational goals of the particular schools in which they work. What these teachers in fact do, what decisions they make regarding the way they allocate their time, how they allocate the various resources available to the organizations, what kind of activities they provide for their pupils and how they organize these activities, constitutes a different kind of evidence of the existence of an organizational goal. For example, to take an extreme case, teachers in a school might express the all-round development of pupils as one of the ideal goals of schools. If, however, no time on the pupils' time-tables was devoted to games or cultural activities and if no provision was made for career guidance or for dealing with social and emotional problems, there would be little confidence that their expressed intention was, in fact, a goal of that particular school. Hence it becomes an empirical matter of some importance to investigate what kinds of organizational and administrative policy decisions have been taken in schools in which teachers have different priorities in their goal intentions. With data of this kind, it would be possible to examine the relationship between the goal priorities that teachers have for secondary schools and the administrative procedures which are in operation in the schools in which they work.[1]

A further, and no less important empirical problem is to evaluate the extent to which policy decisions which are consistent with goal specifications actually do contribute to the achievements of the goals intended.

Appendix

I *Output goals*

(a) Student—Expressive

1. To produce a pupil who, even at the expense of other considerations, has had his intellect cultivated to the maximum.
2. To produce a well-rounded pupil, whose physical, social, moral, intellectual and aesthetic potentialities have all been equally cultivated.
3. To assist pupils to examine themselves and their beliefs objectively.
4. To develop in pupils a respect for authority.
5. To develop in pupils a respect for others, irrespective of their race, religion or views.
6. To develop in pupils a respect for property.
7. To develop in pupils a respect for hard work.
8. To develop self-reliance in pupils.
9. To train pupils to realize their artistic and creative potentialities.
10. To teach pupils an agreed body of knowledge and set of skills rather than to allow them to pursue individual interests in the development of whatever potential they may possess.

(b) Student—Instrumental

11. To prepare pupils to take up careers which are in line with the economic needs of the country.
12. To develop the pupil's ambition to get on in life.
13. To train pupils in the basic academic skills.
14. To teach pupils etiquette and manners which will enable them to take their place in any group in society.
15. To equip pupils with the knowledge and skills to perform their responsibilities as citizens effectively.
16. To ensure that pupils mix with each other socially, irrespective of differences in ability or social class.
17. To provide adequate guidance to pupils in their choice of a future career.

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[1] Data of this nature are reported in a later paper, 'The relationship between comprehensive school teachers' goal conceptions and some organizational features of these schools', available from the author.

18. To provide pupils with the interests and skills which will enable them to make adequate use of their leisure time.
19. To provide pupils with the skills appropriate to parenthood.
20. To facilitate for pupils the transition from school to work.

(c) Direct Service
21. To assist the local community by allowing the facilities of the school to be used by others when the school is not in session.
22. To assist the local community by developing programmes of community service by pupils.
23. To provide cultural leadership for the community through school-sponsored displays and productions.
24. To disseminate new ideas that will change society.
25. To seek to preserve the cultural heritage.

II *Support goals*
(a) Adaptation
26. To co-operate to the full with the wishes of LEA officials.
27. To ensure good results in public examinations.
28. To adapt the curriculum and organization of the school to meet special needs and problems of the locality.
29. To keep costs as low as possible by efficient utilization of resources.
30. To seek to retain staff in the face of inducements available at other schools.

(b) Management
31. To involve staff in the running of the school.
32. To involve pupils in the running of the school.
33. To involve parents in the running of the school.
34. To maintain harmony between sections of the school even when they do not agree on important matters.
35. To ensure that allowances and privileges reflect the contribution made by the person involved to the functioning of the school.
36. To encourage pupils to go on into further or higher education.
37. To support the staff in the face of all external pressures.
38. To encourage friendly relationships between staff and pupils.
39. To promote easy communication between staff at all levels.
40. To reduce to a minimum all obstruction to teachers' work in the school.
41. To provide clear terms of reference under which staff perform their duties.
42. To ensure the efficient supervision of the work of pupils and staff in the school.
43. To encourage the staff to work together as a team.

(c) Motivation
44. To protect staff's professional freedom.
45. To give teachers maximum opportunity to pursue their careers in a manner satisfactory to them.
46. To provide a full round of pupils' activities.
47. To provide maximum opportunity for pupils to enter upon any course they may be interested in.
48. To develop the pride of staff and pupils in the school and the things it stands for.
49. Maximize pupils' enjoyment of their work in school.

(d) Positional
50. To increase the prestige of the school, or if it is already high, to ensure maintenance of that prestige.
51. To preserve the character of the school.

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EDUCATION AND CLASS

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THIS PAPER is an attempt to put the vast quantity of research on the characteristics of 'lower class' children into the framework of a general sociological theory. It is necessarily critical of the sociological naivity of the assumptions which have underlain much of this research and argues that the clusters of characteristics seen as being the property of certain groups of children can only be understood as arising out of their relative positions within the social structure and their historical and cultural experience. It is suggested that the 'lower classes' are characterized by subordination to which education is seen as contributing. Sociological, historical and anthropological evidence is utilized to support the argument, which concludes with a practical suggestion for reform relating to the structure of authority and the nature of control within the schools.

'The social system is, to be sure, made up of the relationships of individuals, but it is a system which is organized around the problems inherent in or arising from social interaction of a plurality of individual actors rather than around the problems which arise in connection with the integration of the actions of an individual actor. . . .'

Parsons, T. and Shils, E. (1962)

'To be aware of the idea of social structure and to use it with sensibility is to . . . possess the sociological imagination.'

Wright Mills, C. (1970)

'We can speak sensibly of social stratification in relatively stable societies only, where the same class has dominated . . . for many generations, . . . shaping for many decades the uniform cultural framework for the processes of socialising individuals . . . their values, which are functional to the existing social system and therefore supported by all means the dominating class can utilize, become an integral part of the common culture; they are internalized during and through the process of societally organized education; general consensus concerning the inequality of social positions . . . is an outcome of this process. . . . Thus the final result is the emergence of large self-accepting and self-perpetuating groups, having an attitude of superiority towards some, and of inferiority towards others.'

Bauman, Z. (1967)

1. A Theoretical Framework

That there is some connection between the value systems of socio-economic groups and their educational attainment has been adequately demonstrated by much empirical research. Research has also shown some connection between values, attainment and social mobility (Banks, 1968). It is, I think, obvious that some values must, over time, come to be shared by all groups, or at least by most groups, within an ongoing social system and that these values must include differential evaluation of self and other. In social research in education, however, there has generally been a failure to see these values as part of a universal, self-sustaining pattern. Consequently variations in values, differences between sub-cultural attributes, as for example differences in aspiration and motivation and the differences in language usage between the classes, have tended to be seen as dysfunctional to

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the social system as a whole (Musgrave, 1965; Clegg and Megson, 1968). Owing to this failure to see the various parts of the overarching value system as complementary there has been the far more important failure to see the connections between the sub-value system, the stratification system and the social system. As a result, social and educational reformers have gone on to propose measures designed to bring about changes in particular parts of the value system without reference to the effect which this may, theoretically, have on other sets of values; nor have they tried to anticipate the ways in which other social groups, who may feel threatened by the proposed reforms, may seek to protect themselves and restore the previous balance of evaluations. Most important, however, due to the failure to see values as related to the social system as a whole, they have proposed remedies largely condemned to failure from the start or which will produce results different from those intended. One example of this is the general interpretation by the teaching profession of Bernstein's theories as meaning that all we have to do is to increase the vocabulary of the working-class child. Another is the inability of the teacher training institutions to give their students a professional ideology which can resist for long the retraining or detraining that goes on in the staffrooms of schools (Perry, 1969).

Of course, in a perfectly rigid stratified society the distributed values will be such that no-one will seek to change the social structure; mobility will not exist and the members of each stratum will accept as immutable not only the rightness of their own position but also that of all other groups superior or inferior to themselves. In such a society there will be no socio-psychological motivation to move; self-perception and perception of others will be such that ambition will be confined to the ends attainable within the groups and not beyond its boundaries. In a society subject to some change, internal or external, where there are, as a consequence, discernable redistributions of wealth, power or status, there will develop areas in which values will overlap and come to be shared by members of adjoining strata. Also values will begin to be questioned by those who see others, hitherto superior or inferior, change their position. In a perfectly mobile society, a model which is probably even theoretically impossible, one would expect one common value system to be held by all which did not differentiate between groups.

British society, of course, lies somewhere between the two ideal extremes. There is some mobility, the extent of which is in dispute; there is some acceptance of common values relating to the differential evaluation of the various strata; and there is some movement along the lines differentiating the different groups. Research into, for example, educational attainment and its associated values has tended to assume, in accordance with the dominant socio-political ideology, a higher degree of mobility than possibly actually exists (this, of course, hinges on the definition of 'mobility'), and, more important, it has seen the distribution of values not only, as argued above, as divorced from the social structure, but also as static and not related to changes in the social distribution of power and status. Consequently the formation of values has not been seen as the outcome of historic forces; research has described the present 'what' but has not gone on to undertake the sociologically necessary task of attempting to explain the 'why' and the educationally necessary task of explaining the 'how'.

Therefore, firstly, we must spell out what is known about the different clusters of values and attitudes of the social groups and what is known about changes which have taken place or which are currently occurring.

Having done this we must then attempt to relate these clusters to the social experience of these groups. This can only be done by deductive, historical and comparative methods, using both concepts drawn from the 'functional' and the 'conflict' schools in an attempt to suggest causal connections. Thus we may ask what 'eufunctions' (supportive of the status quo) are obtained by a given system and distribution of values and whose or what interests are protected. Then we must try to discover what 'dysfunctions' are created and for whom, whether part or all of the social system suffers. And we must also be aware of the possibility of 'non-functions' existing, attributes which seem to serve no discoverable purpose of interest (Merton, 1968).

Thirdly, having discovered the 'what' and attempted to suggest the 'why' we must then, if this whole exercise is to have educational relevance, seek to understand the process by which individuals come to accept a given cluster of values and psychological attributes which constrain their educational attainment and how these may possibly, if at all, be changed by conscious policy without causing disproportionate damage to the individual psyche or to the social structure. It is possibly necessary, in order to disarm readers who may think I am implicity arguing a crude socially determinist, infinite malleability theory of personality, to say, without going in detail into the sociology of personality, that I am assuming that personality is an open rather than a closed system; that is, its characteristics are determined by social experiences rather than merely modified by them: that social experience structures the biologically given characteristics into the abstracted concept we call personality (Spitzer, 1969).

At this point it is probably necessary to attempt to state a general thesis relating to the various value systems held within stratified societies. This I will attempt; then I will try to do the same for the values of the working class as a special case of the general theory.

The general theory is something like this:

1. A society will create, over time and through the different social experiences of the groups within it, an inter-related pattern of value systems which will tend to give cohesion and stability to the social structure.

2. These value systems will be such that each will give moral/ethical/cognitive/religious/psychological/etc. support to the social structure and its differential distribution of access to wealth, power and status.

3. Each group or class will have a different perception of itself and the self-perceptions of each group will complement each other. These self-perceptions will protect the position within the social structure of each class and will also preclude attempts by individuals, or segments of classes, to change their self-perceptions and their social positions. The values held by self and other will have the effect of making change both socially and psycho-socially difficult.

4. Difficulty will arise because the value system held by members of a class will contain specific values about their abilities, aptitudes and potential which will constrain the aspirations, motivations, expectations, etc. of that class.

5. Members of a class who do develop values which implicitly or explicitly challenge the value system balance will be 'cooled out' of their 'deviance' by pressures from within their class and from outside by other social ·processes which will redirect them back into their value system of origin. Education plays an important part in this 'cooling out' process.

6. In a society with some social mobility the process described in 5 will not operate perfectly and there may well be some signs of strain exhibited by those who do change class and value system but this strain will not be intolerable because of the large area of symmetrical and common assumptions and values contained in the operant systems within reasonable reach of any individual.

7. Education, in modern industrial society, is a critical component of the 'cooling out' process although the mode of operation may be different in different national cultures.

Our particular thesis, or the special case of the lower classes in Britain and applicable, with modifications, to the lower classes of all nations with similar social histories runs like this:

1. The value system of the lower class is such that it constrains their behaviour, their self-perception and their aspirations and defines their aptitudes and abilities in such a way that to engage successfully in middle class behaviour is very difficult. The corollary of this is that the value system of the middle class is such that it not only prevents itself from recognizing unexpected behaviour from the lower classes but it also acts in such a way as to reinforce and even create that behaviour which it expects from the working class.

2. The genesis of this system of values must be looked for structurally and historically. In other words it is the result of previous social experience; of the way in which the lower class has been treated and of the way it has perceived that treatment and reacted to it. Its values are both the consequence of social facts, the rationalizations of those social

facts and accommodations to them. They are the product of their experience and the cause of their experience. They have been forged and are still being forged by socially external and objective forces and by the internal adjustments which are needed to fit them into a pattern acceptable and explicable in terms of the values and expectations held.

3. In a society with compulsory education for all and where some social mobility is possible through education the function of education and the role of the teacher in this sphere of value dissemination becomes critical (Smith, 1973). The sting in the tail of Durkheim's famous definition of education has usually been missed: 'Education is the influence exercised by the older generations upon those who are not yet ready for social life. Its object is to awaken and develop in the child those physical, intellectual and moral states which are required of him both by his society and *by the milieu for which he is specifically destined*' (my italics). For, although the function of education and the role of the teacher is important in selecting those who will be given the opportunity of attainment and in providing the symbols by which mobility may occur and be legitimated through attainment this is only for an undetermined but small minority; the major function of education is in reinforcing those value systems which will prevent attainment by lower class members, thereby restricting mobility and so stabilizing the pattern of stratification. It is the failure, or unwillingness to recognize this major function of education that makes nonsense of and prevents the success of attempts to improve the education of the underprivileged, the poor and powerless.

2. Research

This section is devoted to brief accounts of research and descriptions of the apparent characteristics of lower class children, largely British and American, which will illustrate their value system and the behaviour deriving from it. It will also, of course, include illustrations of the values of other classes and of teachers and schools which, it is hoped will show not only the differences but also the results of the interactions between them. The selection does not claim to be complete. It is given in alphabetical order. It is necessary to give it in this way in order to avoid giving the impression that scientific research proceeds in an ordered and theoretically structured manner and, equally important, this manner of presentation reduces the danger of not seeing social structure, value systems, and the relationship between them as essentially dynamic and dialectic.

One or two words of warning are perhaps in order, however, before we go on to describe the research. Firstly, as will be evident, the level of scientific neutrality is not as high in every piece of research as might be desirable. In some cases 'middle-class' values are taken as being 'better' implicitly than corresponding working-class values without the author having stated explicitly his criteria. Secondly, most of the writers have taken a psychological definition of personality as unquestioned (the sociologists do this as much as the psychologists!) which means that, not only is their account of the interaction between the two static but they give a priorness and independence to personality that should not be acceptable to sociologists unless, of course, they are prepared to deny Durkheim's (1927) assertion that social facts must be explained by social facts.

Ausubel (1963)

He defines intelligence tests as measuring 'function or operating capacity at a given point'. The culturally deprived have few test-taking skills; they are less responsive to pressure of time; they are less highly motivated to do well; they are less familiar with the language of tests. He examined the 'critical period', or 'stage of readiness' hypothesis and argues that this is difficult to apply to the cognitive development of children. Older children seem to have a distinct advantage in learning new skills. But the result of missing early learning is to build up a 'cumulative deficit' which limits later learning. It is from this that the possibility of the irreversibility of cultural deprivation may arise and from the fact that learning becomes increasingly differentiated and specialized with age and the child who has missed the early undifferentiated learning may not have the basis on which to specialize.

Bernstein B

The following is a summary of Bernstein's early major article, 'Social class and linguistic development: a theory of social learning' (Bernstein, 1958).

He discusses the centrality of language in the process of socialization and the ways in which it depends on social structure and relationships. He suggests that observable linguistic differences are associated with social class membership. Middle-class children learn both formal (elaborated) and public (restricted) codes. Most lower working class children are restricted to the use of a public code. The formal code is grammatically more complex, permits greater elaboration of meaning and the articulation of subjective feelings and 'points to the prohibition inherent in a complex conceptual hierarchy for the organization of experience'. Public language is simple grammatically and does not allow precise explicit statement of ideas or emotions. It is a language in which much of the meaning is assumed or implicit.

Bernstein has several times emphasized that the restricted code is not *per se* inferior to the elaborated code and he says that the educational failure of lower class children is a 'culturally induced backwardness transmitted and sustained through the effects of linguistic processing' and is not therefore due to psychological factors. He also argues that educational means taken to assist the lower class child should not destroy his restricted code and the cultural values from which it is derived; the 'powerful forthrightness and vitality' of the restricted code must be preserved. The characteristics of the restricted code include the following: short, simple often incomplete sentences; frequent use of personal pronouns, but not 'I'; repetition of conjunctions; few subordinate clauses; few qualifiers; much 'sympathetic circularity" repetition of idiomatic phrases; dislocated, discontinuous argument; much extra-verbal communication.

In other articles Bernstein has attacked the concept of compensatory education on the grounds that the working class child has not yet been offered even fair access to educational facilities; that the concept is a value-laden one which implies the superiority of middle-class culture, and, that anyhow 'education cannot compensate for society' (Bernstein, 1971).

Bronfenbrenner (1961)

He sees the lower classes adopting middle class patterns of child rearing, but important differences between the classes remain. Psychological disciplinary techniques are increasingly being used; parents are more permissive, affection is more openly expressed; reason is taking over from personalized authority as a means of exacting compliance; feelings of guilt are encouraged by these techniques. There is a risk that boys in lower class families are not 'adequately' disciplined and that girls will be over protected. Mothers tend to use love-based techniques in all classes but fathers use direct methods with boys in the lower classes. He sees these trends as increasing achievement motivation but fears they will also lead to increases in aggression, cruelty and tenseness.

Bronfenbrenner (1957)

He emphasizes the importance of the mother in the formation of attitudes and values, particularly achievement motivation. High achievement motivation seems to flourish within families with an atmosphere of 'cold democracy' and families with early maternal involvement and then strong pressures for independence and achievement. These are the characteristics more of the middle than lower classes. The middle class family is accepting and egalitarian, the lower class family is oriented towards obedience and order. Lower class fathers are more authoritarian. Lower class boys who do succeed at school often have mothers who have married 'downwards' socially.

Caro (1966)

His research shows working class boys to be less confident of their ability to achieve goals. Caro sees the acceptance by the working class of lower degrees of success as a necessary adjustment on their part to their circumstances. They are, in fact, 'realistic' and anticipate greater difficulties in their efforts to achieve success by scaling their goals down.

Coleman (1969)

He looks here at the problem presented by working class children who do succeed at school. He compares the attitudes of the parents of such children with those of upper middle class parents. He finds that both use similar control techniques; both use similar reinforcement behaviour; both have similar family characteristics and both share many attitudes of behaviour in common.

Deutsch (1963)

The argument here is that the skills which the lower class child brings to school with him are such as to make early failure almost inevitable. Therefore 'school experience is negatively, not positively, reinforced'. The confusion and noise of the home means that skills of inattention are learned. The lack of expectation of reward means that the tasks undertaken are 'motoric', have a short time span and are likely to be related to concrete objects or services for people.

Drews and Teahan (1957)

They conclude that 'the achieving child is conforming, docile and conventional'.

Floud and Halsey (1957)

They reported that in South West Hertfordshire material environment was less important in differentiating between unsuccessful children than family size, education and attitudes of parents. But, in Middlesbrough successful children were distinguishable by the relative prosperity of their homes.

Fuchs (1968)

The value system of the slum school contains the tacit belief that social conditions outside the school are such that failure by the children is inevitable. This *belief* makes such failure inevitable. The school socializes new teachers into its values and attitudes whereby they are perpetuated. Therefore failure is perpetuated because teachers learn how to help children fail.

Golden and Birns (1968)

This reports research that indicates that social class differences in test scores do not become evident until the age of two. The authors conclude that either a) class does not affect preverbal cognitive development, or b) the tests used do not show it!

Harrison (1968)

This is a study of 'inconsistent' children; those from 'good' homes who do badly and those from 'bad' homes who do well. He finds that the advantaged children who are unsuccessful in school have similar attitudes to those of disadvantaged non-successful children. The disadvantaged but successful children have similar attitudes to the advantaged and successful.

Henry (1971)

In a passage in which he is talking about the 'randomness' of the behaviour of lower class people he says that wherever, in our culture, achievement and security cease to be components of perception, behaviour will appear to the middle class observer to be random. 'An important modality of achievement is hope and a central modality of hope is time . . . the person who has no hope of achievement or security will have no conception whatever of the organization of behaviour (relative to middle class behaviour) at all.' He characterizes lower class behaviour as subject to entropy—which is the measure of randomness—and hence of loss of organization.

Himmelweit (1955)

Here research shows prejudice by teachers against working class boys. The teachers chose more middle class boys as being popular than the boys themselves chose. Moreover, teachers from working class background tended to have opinions that asserted that the 'wrong sort' of boy was being allowed into grammar schools today—this in spite (or because?) of the fact that they were themselves the 'wrong sort' of boy.

Hoggart (1962)

'Grammar schools can exert a great—if well meant or even unconscious—pressure to remove their working class pupils from attachment to their homes and neighbourhoods; they (teachers) seek to attach them to middle class values. . . . A substantial proportion (of teachers) not only reject their working class background but reject it with scorn and adhere to their new middle class attitudes; they are rigidly orthodox and wish to preserve a hierarchical society.'

Hyman (1967)

The lower classes have a system of beliefs and values which inhibit or prevent them from undertaking those actions which would improve their low status. This value system places less emphasis upon the traditional high success goals, increases their awareness of the lack of opportunity to achieve success, and puts less emphasis upon the achievement of goals which in turn would be necessary for success. The lower class child does not want as much success, does not expect to get it if he wants it, and does not want that which might help him to get it.

Kahl (1965)

He summarizes the research on the social class distribution of value orientations: '. . . their results are comparable and parallel. Simple attitude items were devised to measure abstract values about certain social relationships and behaviours connected with achievement orientation and they produced scales that 'worked' in two senses; the same items clung together to define given scales despite distances of time, geography and language that divided the field studies; and the co-relations of the scales with an outside variable, socio-economic status, were stable'.

Kahl (1957)

In this work he shows that only the boys who had internalized what he calls 'getting ahead' values were sufficiently motivated to overcome the obstacles which, as lower middle class or working class boys, they had to face in schools. He shows the great importance of parental value orientation.

Kahl (1953)

He argues that the evidence shows that while native ability is an important factor in determining success in the first few years of school social class and related values soon take over and strongly influence the school work of the student. Studies also show, he says, that those students who do succeed in school despite negative values in their social environment usually have strong motivations or important encouragement.

Katz (1964)

He argues, on evidence, that the middle classes emphasize status achievement and utilize a procedure emphasizing personal effort and personal worthiness. The working classes (particularly the lower working class) define success in terms of possessions.

King (1969)

He claims that the 'social value component of the culture transmitted by the School had a high middle class loading'. The sons of parents who had been to grammar school themselves held grammar school values. There was a high level of involvement in the school by boys who viewed it as an avenue to vocational success. There was some difference, however, between the declared aims of the teachers and the perceived aims of the boys; the former talked more of educational values, the latter saw the school more instrumentally.

Kluckholn (1961 and 1970)

Value orientations are 'complex but definitely patterned . . . principles which give order and direction to the ever flowing stream of acts and thoughts as these relate to the solution of common human problems'. They see these problems as relating to: the nature of man; relationships between man and nature; the evaluation of time; the meaning of activity and the nature of significant relationships. They suggest that there are several different solutions which may be given to these problems and that there is a definite patterning of the answers given by the different social classes. For example, the middle classes see human nature as a mixture of good and evil, see man as exercising mastery over nature, place high value on time future and on doing, and emphasizes individuality. Whereas the working class possibly see man's nature as good, see him as subordinate to nature, emphasize time present and being rather than doing, and emphasize collectivity.

Knupfer (1947)

He argues that the psychological characteristics of the underdog constrain and restrict his behaviour in ways which reflect and reinforce the restrictions imposed upon him by external economic and social forces.

Kohn and Schooler (1969)

The authors relate social class to orientation and values. They refer to other research by Kohn (1959 and 1966). These researchers found a significant difference between middle class and working class parents' values for their children. The middle class favoured self-direction and the working class favoured conformity to externally imposed rules. They argue that social class is consistently related to the values held for self, for one's children and to orientation to self, society and work. They suggest that these values and their class distribution can be explained as the cumulative effects of education and occupational position. Occupational position is important because it determines the conditions that give or deny the opportunity for self direction. Education is also important because it can give the necessary flexibility and perspective for self direction.

Kohn (1959)

On evidence from his own research he says that the working class parent reacts to his child's behaviour in terms of its immediate results; the middle class parent reacts in terms of the intentions. The working class parent emphasizes acceptance of one's environment and one's lot in life; the middle classes emphasize acting in accordance with one's own principles and assume that one's environment and lot can be changed. The working classes value for their children qualities that assure respectability, 'desirable' behaviour is not violating proscriptions; the middle classes value the child's internalization of standards of conduct, 'desirable' behaviour is acting on principle.

Le Shan (1952)

Temporal goal orientations vary by class. Lower class orientation is seen as quick sequences of tension and relief and there is very little planning for the future. In the middle class the tension-relief sequences are longer and planning into the future develops as the individual grows older. Le Shan says that the child rearing practices of the classes encourage this difference. The lower class train by immediate punishment and reward whereas the middle classes often defer punishment and reward. In a piece of research in which eight- to ten-year olds were asked to tell stories, the working class children's stories spanned a shorter period of time than those of the middle classes.

Mays (1962)

Mays sees slum neighbourhoods acting as a collectivity or cluster of factors acting together to produce poor schools and poor school attainment and educational deprivation. He sees social, economic and attitudinal factors reinforcing and supporting each other.

Musgrove (1965)

He found that working class parents wanted teachers to encourage such basic behaviour as cleanliness and obedience and the acceptance of authority. They also wished to restrict their children's friendship groups and were less educationally and occupationally ambitious for their children. They tended also to undervalue their children's educational ability and potential. If they criticized the schools it was because they thought the schools neglected practical and applied subjects. In each of these attitudes the working classes were different from the middle classes.

Parsons and White (1961)

Parsons has summarized much of the research relating to value differences between the working and middle classes. The former exhibit more co-operativeness, dependence, mutuality and less awareness of self, less competitiveness, less concern with privacy, less concern with ritual and courtesy; they are also more subject to externally imposed controls and so are more 'other directed', they show less anxiety, they are more egalitarian and prefer informality.

The middle classes on the other hand are more competitive, they exercise more personal autonomy, they establish ego early, they value privacy and courtesy, they are inward looking and 'self directed' with internalized controls.

Reisman (1962)

His account of the culturally deprived child is somewhat loaded but is an attempt to synthesize much of the relevant work. He sees the 'weaknesses' as being: traditional and narrow in outlook, pragmatic, anti-intellectual, individualism and creativity are only slightly developed, they show signs of alienation, political apathy, suggestibility and naivity, they have boring occupational tasks and crowded homes. Their 'strengths' lie in the co-operativeness and mutual aid of the extended family, they exhibit less tension and strain, they are more egalitarian and value informality and humour, they are relatively free from self-blame and parental over-protection, they show less sibling rivalry and enjoy a degree of security in the extended family and in their traditional outlook. Reisman describes the 'style' of the deprived child in the following way. They are content rather than form centred, they are externally orientated rather than introspective, they are physical and visual rather than aural, problem centred rather than abstract centred, inductive rather than deductive, spatial rather than temporal, slow, careful, persevering rather than quick facile and flexible, they have a lack of formal language skills but a highly developed system of informal language and gestures.

Rist (1970)

This is a study of the teacher and the organization of the classroom on the basis of his perceptions of children. Initially the teacher perceives the child on social class rather than academic criteria and the children are grouped within the classroom on social scale criteria. Then, over time, academic criteria are used to differentiate within the social class groups. Hence there develops what Rist calls a caste system within the classroom.

Roberts (1968)

He advances here the theory that the ambitions and aspirations of young workers are determined by their careers and not vice versa. He argues that young workers and school leavers believe that they have a career choice but the career and employment opportunity structure, the school and the home determine their choice. The process operates upon the individual through the necessity of a 'job identity' before personal identity can fully develop.

Rosen (1956)

He found that achievement value correlated with both educational aspirations and with social class. He also found that those with higher aspirations than the norm for their class also had higher achievement value and under-aspirers had lower achievement scores.

Schneider and Lysgaard (1953)

They advance the theory that the working classes seek immediate gratification and the middle classes are prepared to plan ahead and thereby postpone gratification.

Schwebel and Bernstein (1970)

They show that working class children exhibit more impulsiveness than middle class children in test situations and that this can be seen as a defensive reaction to the tension generated in such a situation. They also showed that this impulsiveness can significantly affect performance on tests.

Stephenson (1958)

In a comparison of English and American youths they found that it was the working class pupils 'who most lower their aspirations when it comes to considering plans or expectations'.

Swift (1965)

He suggests that there are two 'ideal' family types for educational success. The first is the usual 'ideal-type' of 'cultured' upper middle class family in which the child is stimulated in a general tolerant fashion to develop his capacities in many directions'. The second is characterized by its lower middle class status and by a high degree of mobility pessimism, it views education instrumentally as a means of improving career prospects—the father blames his own relative failure on the inadequacy of his own educational qualifications. Discipline in the family is of the traditional type, it is not permissive or tolerant. Because of the lower middle class nature of the father's occupation he has wider career horizons for his children than the working class parent.

Yee (1969)

He found that 'the most significant factor' in determining teacher-pupil interaction was the social class of the pupil. Middle class pupils saw their teachers as warm, trusting and sympathetic and working class pupils saw their teachers as cold, blaming and punitive. Attitude patterns of the middle class pupils matched the attitude patterns of teachers better than did the attitude patterns of working class pupils. Working class pupils' attitudes towards male teachers were significantly more favourable than their attitudes towards female teachers.

3. Discussion and Conclusion

I suggest that there is enough evidence, accepting qualifications and hesitations arising from the limitations of the methodology of some of the work, to indicate that the lower or working classes exhibit in the context of educational processes a cluster of attitudes, perceptions and aspirations which are cohesive enough to be called a system tending to be self-supporting internally and self-differentiating externally.

I further suggest that this system is sufficiently coherent and has the necessary width and depth to justify being described as what Clyde Kluckholn (1961) has called a 'philosophy'. 'There is a "philosophy" behind the way of life of every individual and of every relatively homogeneous group at any given point in their histories. This gives, with varying degrees of explicitness, some sense of coherence or unity both in cognitive and affective dimensions. Each personality gives to this "philosophy" an idiosyncratic colouring, and creative individuals will markedly reshape it. However, the main outlines of the fundamental values, existential assumptions and basic abstractions have only exceptionally been created out of the stuff of unique biological heredity and peculiar life experience. The underlying principles arise out of, or are limited by, the givens of biological human nature and the universalities of social interaction. The specific formulation is ordinarily a cultural product. In the immediate sense it is from the life-ways which constitute the designs for living of their community or tribe or region or socio-economic class or nation or civilization that most individuals derive their "mental-feeling outlook.' "

What this passage does not do and neither does most of the research into the 'philosophies' of the working class—is to attempt to locate the system of the lower classes into the overall pattern of value systems of the other groups in their society. Kluckholn suggests that a 'philosophy' is created from the folk-ways of their community but the folk-ways of a community can only be properly seen as the product of reciprocal interaction between the various communities within a social system. And, I argue, this is a dialectical process which must be seen through time, historically, to be understood. When, therefore, Olive Banks (1968a) says in talking of the influence of material conditions on the attitudes and attainments of working class children: 'moreover, even when these adverse conditions are no longer present, the fact that they have existed in the recent past, or were a feature of the parents' own childhood, may exert an influence on attitudes, values, and aspirations for a generation or even more' she is grossly underestimating the capacity for survival of such characteristics which may make it necessary to go back many generations to understand their origins. Similarly, when she (1968b) is discussing Turner's critique of some of the work on the class distribution of value orientations and suggests that 'the expectations and perceptions both of themselves and of others, held by working class parents and their children, have perhaps been neglected as a subject of study', she neglects to make the further suggestion that such perceptions are structured socially and can only be understood as part of a social matrix.

The argument then runs something like this: given an adequate sociology of education it should be possible to predict with some accuracy, allowing for ethnic, religious and sub-cultural variations deriving from the varieties of past experience, the core cognitive and perceptual characteristics of the members of a definable strata within a stratified society. In other words, given the understanding that the lower classes in Great Britain have been subject to relative poverty, to inadequate housing, to unemployment, to personal and group insecurity, to limited vocational choice, to noncreative repetitive, concrete, physical work, to subjection and subordination, to a relatively higher birth rate, and death rate, to a political system which seemed ineffective in improving their lot and an educational system which was imposed upon them and a knowledge industry that seemed irrelevant to their perceptions—given this understanding it should have been possible to predict those characteristics which have been discovered only after much research. The necessary analytical concepts have existed, in Marx, in G. H. Mead, in Durkheim; and the factual knowledge has also existed in, for example, Engels and Booth. The descriptive insights have been there in novelists like Robert Tressel (1965), Jack London and to some extent Orwell; they have also been seen by people like Lawrence and Hoggart. But all these strands have not been brought together and so the sociologist of education, professionally preoccupied by the needs for scientific respectability through empirical quantification procedures has failed to develop either his imagination or his perspective and consequently his theory has atrophied. As a result, in the sociology of education, we are only just beginning to see the characteristics of the working class child as something other than manifestations of his peculiar psychology.

The American sociologist, Bernard Barber, wrote the following in 1957: 'Family solidarity will cause the members of different classes to have different interests in social mobility . . . different political interests . . . different attitudes towards income . . . different economic interests . . . different educational interests. . . . And so it will be with every kind of social interest: recreational, cultural, and even religious'. One is tempted to ask whether research like the Douglas work on 'Home and School' (1964) and 'All Our Future' (1968) is really necessary and particularly to question the value of such writers as Clegg and Megson (1968); for emotion unbridled by understanding is even more dangerous than statistics uninformed by theory.

At this point I tentatively want to carry my argument one stage further. I have suggested that the cultural-historical approach, deriving its direction from the body of sociological theory I have mentioned, would have enabled us to have predicted with some accuracy the 'characteristics' and responses of the working classes in the educational context they have been offered. It is necessary to simplify this. The way in which one, as a member of a group, is treated indicates the perceptions which other groups have of one's own. The treatment of the lower class derives from its subordination and the structural necessity to maintain that subordination. All known societies have had a differential distribution of status, of power, of wealth. All societies have a division of labour, a division of roles and a concomitant differential distribution of knowledge and a consequential differential distribution of self perceptions. These various distributions will inevitably tend to cluster and certain groups will, over time, exhibit consistent characteristics. Where formal educational institutions are introduced the perceptions and understandings of those who structure the form and determine the content of education will tend to ensure that the educational processes will work to this end. There will be a tendency for education to emphasize the subordination of the subordinate and there will be the development of curricula, methods and techniques and uses of language which will have this function in both latent and manifest forms.

Jules Henry (1971) refers widely to the work of anthropologists to show that in racially divided societies, in colonial societies or in societies split by class divisions the dominant or exploiting group 'tends to organize the educational system so as to strengthen and maintain its own position. The anthropologists stress the repressive and destructive effects on the subordinate group of education by the dominating group'.

Henry emphasises the political use of education to perpetuate dominance and subordination. But the subjection of the lower classes is not only to other men, or to other groups. It is also to the material environment which surrounds them and on which they are dependent not only for sustenance but against which they perceive their own being. This material environment includes not only the urban industrialized world of today but all other manifestations of the work of nature and of man-upon-nature. Thorsten Veblen (1918) argued persuasively that the nature of the dominant occupational pattern created a 'philosophy on life' and particular perceptions and attitudes to the world. The environment includes not only cotton mills, council flats and supermarkets in Lancashire, but also tractors and milking machines and the land-use of rural Wiltshire. Subordination is to man, machines and 'natural' environment (Bennet and Bennet, 1970). Each of these environments will co-operate with any political subordination to produce similar socio-psychological characteristics in the subordinated. The major social contexts of man are his family, his place of work, his topographical environment and his school; the family alone of these will retain, whilst it remains nuclear or extended and not collectivized, a degree of autonomy, scope for individuality and a potentiality for deviance. But work, environment and school will emphasize and support, for most, a state of subordination, a condition of dependence and an acceptance of powerlessness to effect change. Where there is a religious context this, again, for the lower strata, will emphasize subordination; where there is an intimate and immediate community context this may support the family influence but this combined influence will tend to divert or protect from or compensate for and not direct against or conflict with the other subordination-making pressures for, in part at least, they will merely provide the framework for local or personal reforms. Factors making for subordination will dominate the major social process and institutions, the work situation and the environment.

Joan Simon (1970) draws upon the work of Homans (1960) which suggests that the 'philosophy' of the medieval peasant was similar to that of our contemporary lower urban classes. Agricultural work reinforced certain ways of thought. There was a tendency to see the future in terms of the past, to think in terms of cycles equivalent to the agricultural year, and of human life following a similar cycle from birth through the different ages of man to death. Related to this were the ways of preparing the young to fit into social life, as it was and would continue to be. This form of upbringing had few specific features. In a restricted community it was subject to few intellectual influences. The oral culture emphasizes memory . . . Logic-empirical thought. was not absent but it was only directed at specific aspects of work; 'most teaching and preaching was directed to persuading them that unremitting toil was the lot God had appointed for those at the base of society'. Too great an awareness of oppression was avoided by clinging to the pattern of life and to the vernacular oral tradition. This largely protected the peasant from teaching and preaching directed from outside—as may even be the case today, despite all the modern technology of education—and ensured the maintenance of a distinctive popular culture and outlook. As a result, Simon suggests, 'the worker saw himself as a part of nature, as co-operating with the elements; accordingly his tendency is to placate, since he lacks the means to coerce, to value security above adventure, to surrender to Providence rather than tempting it . . .'.

Even more strikingly reminiscent is Joan Simon's description of the attitudes of the Florentine merchants of the early fifteenth century. This time the similarity is with our contemporary middle classes. Their domestic life was well regulated both as a background to efficient business and as a base for bringing up healthy children with a sound moral outlook; their education was directed towards communication and, more specifically, to encouraging the individual skills and attitudes needed in business affairs; the aim was to avoid making enemies and to acquire friends; to be of good appearance, courteous, equable and not eccentric. On the other hand, the potential merchant had also to avoid timidity and conformism, he needed judgement and strength of character, energy, versatility a readiness to take control of events. Literacy was a practical necessity, also an apprenticeship in the art of communication 'beginning with active participation in the community of the household . . . the need for love and understanding rather than force and fear enter into this. . . . Parents should try to ensure that a child develops his own particular characteristics, for individual character is an asset in social life and active qualities such as willpower are needed in business'.

So we can see parallels between the attitudes of the modern middle classes and their emerging if still marginal predecessors in the middle ages and the characteristics of their social subordinates. In each case the value system exhibited can be hypothesized as a function both of the relative position of each within the total social system and as a function of the relationship of each to the surrounding material environment. Subordination, inferiority and dependence will encourage the development of one system of values; superordination, superiority and independence will encourage the development of different but complementary values. It is worth pointing out in particular one aspect of the values of the peasants and the merchants described by Simon—that is the function assigned to language in each system. This would seem to give interesting implicit support for the thesis about language advanced in recent years by B. Bernstein.

Similarly Kluckhohn and Leighton (1946) in contrasting the Navaho, a people without the technology for challenging nature and therefore subordinated to it, with Europeans suggest that the former accepted nature and adapted themselves to her demands as best they could, but they were not utterly passive. They tried many things designed to control nature physically and to repair damage caused by the elements. But they did not expect to conquer nature. The Navaho tried to influence her with songs and rituals but they knew that the forces of nature, rather than anything that man did determines success or failure.

It is, then, the relevance of all this to teaching which must concern us now. Those who deplore, for whatever reasons—be they economic, cultural, political or aesthetic—the 'failure' of the lower classes to benefit from the educational process, in this country or America, assume that there would be net gain, individual or social, if this wastage could be reduced. Some have challenged this, in part or in whole. Jackson and Marsden (1966) have spoken of the destruction of valuable components of working class culture by the grammar schools; Bernstein has argued that working class language and culture have an intrinsic and aesthetic value; Nye Bevan once deplored the fact that the grammar school castrated the potential political leaders of the labour movement. In this country the Welsh and Scottish nationalists and, far more dramatically, the Black Panthers and other ethnic minority groups in the USA are demanding an education which will preserve and not destroy their cultures. On similar arguments some are suggesting deschooling on the theory that this will both relieve working class children from the oppressive effects of an alien and exploitive culture and enable them to develop the educational means of developing their own. Unfortunately an intensification of stratification or cultural differentiation probably will be subject to a sort of multiplier effect and create even wider gaps in communication and understanding leading on the one hand to even greater inequality in the distribution of power, wealth and influence; and on the other hand it will lead to greater social tensions and strains which will bring in train further repression and coercion.

So we are, at the moment, left with the reformers and apparently an unreconcilable contradiction. The argument of this essay has been that the educational 'inadequacy' of the lower classes is the corollary of the cluster of attitudes and characteristics one would expect to find in subordinated groups with a similar social and cultural history. Therefore reform measures which see the attitudes which it wishes to change as mere superficial and idiosyncratic psychological peculiarities are almost certainly doomed to failure and, if they were to have any effect we certainly could not be sure what these effects would be. Reform which does derive from a diagnosis of causes may theoretically have a greater chance of success and may also enable some speculative prediction to be made. But, our argument has been that it is the interaction of social groups through time and in the social structure that create the conditions necessary for the emergence of a system of values or 'philosophy' therefore, logically, structural changes are required to create the conditions necessary for attitudes to change. Also, logically, it would seem most probable that a new subordinated group would be produced within the new social structure. Therefore the contradiction: change is considered desirable, only structural change will make this possible, structural change, even if it were to happen, would bring about, in its turn, problems similar to those with which we began. So, it would seem nothing can, in fact, be done.

This conclusion, however, is not inescapable. Firstly, it is ethically unacceptable and secondly it does not necessarily follow from the sociological analysis which precedes it.

I have argued that it is a group's position in the social structure which is one essential precondition for the development of a 'philosophy'. The 'social structure' is an abstraction, however, which constrains and impinges upon the individual through other micro social structures which are more 'real' like the family, the place of work and the school.

This is not the place to discuss the role of the first two of these institutions, beyond pointing out that both are subject to continuous change and that, currently, trends towards greater democratic participation seem to be gathering speed, but it is appropriate to look at the school. It is equally appropriate to suggest that changes in the internal structure and relations within the school might well be the one educational change which might create the conditions necessary for the desired attitudinal changes. What is certain is that reforms which take place in the context of the traditional hierarchically structured school and thereby replicate and support the external social subordination of the lower class child are probably thereby condemned from the start. Whereas changes in the school which gave the subordinate parents and even their children the opportunity to exercise some of the power usually reserved for the Head, the Governors and the Education Officer might well have that cumulative effect upon attitudes and self images and perceptions of parents, children and teachers that might tip the balance in favour of some of the other reforms which could then be tried in the changed structure of the school. At least the results could not be more, educationally, disastrous than those which obtain at the moment.

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G. Seth: Personality Growth and Learning—Open University Course E281.

Research Notes

Book Reviews

CHILDREN'S USE OF LANGUAGE IN THE NURSERY

VALERIE THOMAS *Course Tutor, Educational Studies, Open University*

TEN BOYS and ten girls in a nursery class, who were matched in age and in nursery experience, were each observed for a complete school day. Every response uttered by and to them was recorded in longhand. Their activities and the time spent on each were noted. The behaviour of the staff and the entire nursery environment were scrutinized. The responses and activities were categorized and analysed in relation to their social class and intellectual and verbal ability. However, no association appeared to exist between the use of certain language forms, such as the question, and certain types of behaviour and any of these dimensions. It was suspected that this was due to the minimal interaction between children and staff, for the same children, in a more structured situation, appeared more ready to use a variety of linguistic forms to explore and to seek to understand their environment. The result would suggest a re-orientation of aims and a more structured approach to nursery activities, if pre-school education is to have a beneficial effect on the linguistic and cognitive development of the young child.

Introduction

The early years are a period of rapid development, when the young child acquires not only language, but also the ability to use it for the purposes of learning. The generally inferior academic performance of lower-class children may be partly attributed to parental attitudes that encourage a language which, although often rich and vital, is less conducive to learning. As lower-class parents tend to place less emphasis on the value of parental interaction (Milner, 1951; Newson and Newson, 1968), so they are less ready to encourage exploration through interrogation (McCarthy, 1954; Deutsch, 1963), or to use a system of control that provides and seeks rationalization (Bernstein, 1961).

An alleviation of the apparent disadvantages of such children has been thought to lie in pre-school education, which has been considered to bestow general, ill-defined, advantages. However, investigations into schools employing traditional methods of child-learning through self-directed activity, have not indicated many beneficial effects, within either the cognitive or linguistic areas (Wann, Dorn and Liddle, 1962; Granowsky and Krossner, 1970; Haupt, 1966; Dorn, 1966; Reichenberg-Hackett, 1962; Douglas and Ross, 1964; Smilansky, 1961), or in social adjustment (Brown and Hunt, 1961; Douglas and Ross, 1964). Many critical evaluations have been carried out in the United States, where alternative programmes have been mounted (Weikart, 1967). These have either introduced a structured approach to concept and language development within the nursery framework (Deutsch, 1963), or carefully planned and sequenced activities aimed towards specific goals in reading, arithmetic and logical thinking (Bereiter and Engelmann, 1966). The absence of adequate assessment or follow-up studies in many of these programmes and the incompleteness of others, have made them difficult to evaluate.

Research design

In England, the value of nursery education has been widely accepted and its methods are only now being questioned. My research was therefore designed to investigate its value, through a study of the language provoked in response to the nursery situation. A survey of the literature had indicated that linguistic and therefore cognitive

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[1] This reports part of the work carried out in fulfilment of the MEd degree, School of Education, University of Leicester.

development is contingent on the quantity and quality of verbal interaction with the adult and on the provision of experience that is both rich and meaningful. It could be presumed, therefore, that nursery education would appear to have a minimal effect on the linguistic development of the young child, if, in the nursery situation:

1. no relationship were apparent between measurable intelligence and 'linguistic intelligence', which can be defined as an indication, through language forms, of an intelligent response to the environment;

2. verbal interaction with adults were found to be spasmodic and impoverished; and

3. the linguistic possibilities of play were severely reduced by an emphasis on gross motor activity.

The scale of my investigation would necessarily restrict the application of the findings. Nevertheless, the analysis might indicate the effectiveness of traditional nursery methods in promoting language development.

Subjects

Three nursery classes which constituted the entire state provision for a town in South-East England took part in the experiment. Each was attached to a primary school and consisted of thirty children, chiefly between four and five years and supervised by a teacher and a nursery nurse. One class served for a pilot study, another for comparison and the third as the experimental class.

From this class, a sample of ten boys and ten girls was selected, between four-and-a-half and five years, who had entered the class together six weeks previously. Seven other children, of varying nursery experience, served as a built-in control group. A second control group was formed of seven children, without nursery experience, who were to join these two groups in the infant school at the beginning of the next term.

General procedure

I observed each member of the sample group for an entire nursery day and recorded in longhand every word spoken by and to them. Their activities were noted and the time spent on each. The behaviour of the staff was observed and the equipment and class activities. In each school, the nursery staff, school heads and the teachers of the first infant class were interviewed. At the conclusion of the study, I recorded the children's conversations, alone or in groups, with myself.

Categories of language and behaviour

The conversations of the children and staff were split into responses (McCarthy, 1930) and these were categorised under the following headings:

1. Sociocentric sequences or statements formulated as questions to set up a 'sympathetic circularity' (Bernstein, 1962), usually in the form of the reversed polarity tag e.g. 'You will come, won't you?'

2. Questions were divided into:

(a) information-seeking questions, which were preceded by the interrogative pronouns 'what', 'when', 'why', 'which', 'who', 'whose', 'how', 'how often' and 'how many'. It was realized that these could introduce questions demanding confirmation of existing knowledge and that information can be sought in other ways, nevertheless, they appeared to be the primary means of seeking detailed information.

(b) physical care questions were concerned with meals, dress, sweets, washing, manners, in short, with the general well-being of the child.

(c) simple questions embraced all questions not included in the above categories. They usually demanded little more than confirmation or negation.

3. Answers comprised replies to questions only, not to commands or to requests.

4. Causal explanations were expressed by 'because' or its diminutive 'cos', or by 'so' or 'that's why'.

5. Hypothetical statements were expressed by 'if . . . then' or 'if' with 'then' understood.

An involvement by the nursery staff in the child's activities was anticipated in their encouragement of his linguistic and cognitive skills. This involvement was classified under the following headings:

1. Activities initiated by an adult (a) inside the playroom; (b) outside the playroom. For example the teacher asked one of the boys: 'Do you want a book to look at Bill?'

2. Activities in which the adult participated (a) inside the playroom; (b) outside the playroom. These activities were further subdivided into:

(i) purely verbal participation, as when the teacher looked over Jane's shoulder to suggest, 'Not on his mouth' and

(ii) active participation when the teacher guided Anne's pencil as she wrote on her Christmas card.

The conscious attempts by an adult to improve the child's linguistic and cognitive skills were classified under the following headings:

1. The adult (a) supplied new information; (b) corrected misinformation.
2. The adult enlarged the child's vocabulary by the provision of new words.
3. The adult (a) expanded, or (b) extended the child's speech (both the grammatical elements and the meaning).

The activities in which the child participated, either alone or in a group, whether motor or stationary, were noted and those evoking application and concentration were classed generally as sedentary.

The degree of concentration was impossible to assess, as it depended on such factors as the child's ability and previous experience and the intrinsic difficulty of the task. I had to be content with categorizing them as completed or uncompleted, if this were self-evident, as with a puzzle, or uncertain, such as in painting or crayoning, when this was difficult to gauge.

The reliability of my choice of categorization for each response was ensured by three people independently analysing the complete daily record of one child, selected at random. As the level of significance achieved by means of the Cochran Q Test was 0·01, it could be considered that my categorizations of language and behaviour were realistic and recognizable.

Measurement techniques

The parents of each child in the three groups were visited, to ascertain their social class grading according to the Registrar-General's classification, the size of the family, the child's position in it, whether the mother worked and the family activities enjoyed during the previous weekend.

After having spent two weeks in the infant class, the Stanford-Binet Intelligence Test Form L and the English Picture Vocabulary Test were administered to each of the thirty-four members. Their infant teacher was questioned on her initial impressions of both nursery and non-nursery children. Two months later, she was again questioned on their general capabilities and adjustment.

In order to determine whether the children's social status, or intellectual or verbal ability were reflected in the language or behaviour as categorized, which were provoked in the nursery class, the data were assigned to one of two classes. The Social Classes I and II were amalgamated to form a higher social group; Classes III and IV formed a lower social group. Those scoring 120 and above on the Stanford-Binet Test constituted an upper ability group and those scoring below 120 an average to low ability group, in order to split the sample roughly in half. The score of 120 is, in fact, higher than the sample's mean of 114 and the national mean of 100. The scores of the EPV Test and all other scores were split into two groups, those above or below the mean for the sample. The Fisher Exact Probability Test was used for analysing the data, together with the assistance of 'Tables for Testing Significance in a 2 × 2 Contingency Table', compiled by Finney, *et al.* (1963). By this method it was discovered whether, for example, children of higher verbal ability asked more questions, or those of higher social status used more causal explanations. The small sample disclosed not only trends within the sample but also allowed the study of a child's performance in different areas.

Results

A comparison of the social class and ability range of the nursery class with the normal population indicated its position as a reference point for other nursery groups (Table 1). Although no members of Social Class V, the unskilled, were present in the three groups, the remaining social classes were proportionately present in both the sample and the composite group, with the imbalance chiefly in Social Class III. It was inevitable that the small numbers of the two control groups would give them an arbitrary composition, but it did not appear that membership of a social group influenced admission to the nursery class and only three children, in Group B, were admitted prematurely on account of family problems.

An expected relationship was discovered between IQ and verbal scores in the sample group, statistically significant at the 0·025 level of confidence. The verbal scores of all three groups, non-nursery and nursery, were depressed in relation to their IQ scores and this depression was most evident in the nursery groups. This would suggest that the verbal development of these children was relatively retarded and that this retardation may have been accelerated by the school system.

There appeared no statistical relationship between IQ scores and social class in this sample, although there was a trend in the direction of higher social class/higher IQ. However, the detailed study revealed influences outside social class which can affect a child's performance, such as lack of confidence, restlessness and the extent of parental involvement.

The size of the family, which is often allied to social class, is suspected to affect intellectual performance, but the absence of a relationship between this factor and intelligence and verbal ability could also be understood when the children were examined in detail. The extent of maternal interaction could have been affected by the economic level of the family. Domestic appliances can reduce time spent on household chores and working mothers would probably still find housework to be done when the child was at home and have necessarily less energy to devote to playing with or talking to the child. (This is not to imply that non-working mothers always do this!) The age span between the siblings, in addition to the child's position in the family, may determine the mother's availability, for a large age gap ensures that older siblings are at school or more involved in peer activities.

However, the verbosity of the child, as measured by his total responses during the day, showed an association not with intelligence, nor with verbal ability, but with social class. The upper social groups I and II, compared with the lower (III and IV) showed a higher number of responses, significant at the 0·025 level of confidence.

Although the able child might be expected to seek to explore and to comprehend his environment through language, such a child did not display such 'linguistic intelligence' in this situation. No association appeared between the use of questions, either simple or those seeking information, of causal explanation or of hypothetical expressions with verbal or cognitive ability.

It did not appear that a child's facility in approaching an adult, nor a home environment that would set a pattern for such interaction, influenced the quantity or quality of his communication with the nursery staff. The paucity of the children's questions revealed their unconsciousness of these adults as a source of information and Jane was the only child to use a hypothetical expression to an adult (Table 2).

Nor did the responses of the adults indicate an awareness of a child's particular need for communication, for stimulating his curiosity or for presenting sufficient speech patterns for imitation. There was no association between any type of adult speech studied and the intelligence, verbal ability or social class of the children (Table 2).

The greater number of physical care questions asked by the teacher and the comparatively small difference between the number of information-seeking questions asked by her and by the

Table 1: The social class distribution and mean scores on the Stanford-Binet and EPV Tests

Group	*I* %	*II* %	*III* %	*IV* %	*V* %	*Mean IQ scores*	*Mean EPVT scores*
Group A	5	15	60	20	0	114	106
Group B	0	28·5	71·5	0	0	119	113
Group C	14·3	0	85·7	0	0	112	109·3
Group X	5·9	14·7	67·6	11·8	0	115	106
National population	3·9	14·4	49·8	19·9	8·6	100	100

(Group A is the sample group, Group B the built-in control nursery group, Group C the control non-nursery group, and Group X is the subsequent infant group, composed of Groups A, B and C.)

nursery nurse, indicated a confusion of roles, although the dinner lady seemed certain of hers.

Of the two hundred and sixty-five questions put to the children by the staff, one hundred and twenty-five were not answered. There was no apparent relationship between either the child's cognitive ability, which enabled him to comprehend the question, or a linguistic ability, which gave him the facility to frame an answer and his presentation of a reply. The children either did not listen at all, tuned out before the completion of the question, considered a nod sufficient or did not think the question worth an answer. As a reply was not pressed, they probably did not think anyone cared if they answered or not.

It was self-evident that three 'why?' questions posed by adults would stimulate few causal replies. There were numerous examples of the use of juxtaposition, although the realization of the causal implication was problematical. The adults themselves frequently resorted to juxtaposition, which was often ambiguous and did not present the necessary speech mode for imitation.

The causal expression was used only on two occasions by the staff, in each case to rationalize their demands. There were no further examples of control being exercised through the presentation of underlying principles. 'Silly', 'naughty', 'horrible', were the ambiguous terms used to express disapprobation. Control was, in fact, exercised by virtue of authority, rather than through the use of explanation or rationalization. The adults did not justify their own actions, nor demand justification from the children for theirs. If possible, their involvement in argument or fight was evaded by positioning themselves outside the children's range, or by withdrawing from the situation, without comment.

Although the children did not appear to provoke information from the adults through the use of questions, opportunities would have arisen in spontaneous conversation, to extend their knowledge and understanding, by supplying information or by correcting misconceptions. New information was supplied to seven children on twenty occasions, although often its value

Table 2: Analysis of responses

Child	*IQ*	*v.a.*	*s.c.*	CHILDREN TO STAFF *questions* simp.	*questions* inf.	*caus.*	*total* resp.	STAFF TO CHILDREN *questions* simp.	*questions* inf.	pc	total	*caus.*	*hyp.*	*total* resp.
Sue	139	133	I	2	1	1	44	8	2	4	14	0	0	46
Jane	132	117	III	0	0	2	18	2	2	4	8	0	0	15
Anne	131	119	II	0	0	0	10	3	2	6	11	0	0	31
Jill	129	119	III	2	2	0	38	7	1	2	10	0	0	33
Margaret	129	124	III	0	0	0	14	5	4	6	15	0	0	55
Jack	127	105	II	0	0	0	7	2	1	1	4	0	0	12
Tom	122	111	III	0	0	0	10	4	7	4	15	0	0	32
Dick	121	102	III	0	0	0	8	0	1	1	2	0	0	14
Michael	120	91	III	1	0	0	46	12	5	9	26	1	0	70
Liz	116	97	III	11	13	2	156	9	5	10	24	0	3	136
Peter	116	106	III	2	1	0	34	5	5	10	20	0	0	55
Paula	116	106	IV	1	2	0	29	3	5	8	16	0	1	41
Carl	114	96	II	0	0	0	7	2	1	1	4	0	0	16
Tracey	108	110	III	1	0	0	39	2	2	6	10	1	0	43
Bill	103	104	III	0	0	0	14	3	2	4	9	0	0	25
Janet	103	106	III	0	0	0	13	3	1	6	10	0	0	25
Stan	97	89	IV	1	0	0	47	2	5	7	14	0	1	53
David	90	98	IV	0	0	0	20	4	2	8	14	0	0	36
Peggy	90	82	IV	0	0	0	19	7	5	14	26	0	0	59
Tim	82	98	III	2	1	0	36	6	6	1	13	0	1	55
Total				23	20	5	609	89	64	112	265	2	6	852
Mean				1·2	1·0	0·2	30	4·5	3·2	5·6	13·2	0·1	0·3	43

†(simp. are simple questions; inf. are information seeking questions; p.c. are physical care questions; hyp. are hypothetical statements; caus. are causal explanations.)

appeared questionable. Seven incorrect statements, voiced by four children, were corrected by the nursery staff, although the basis of the misconception was never revealed to the child.

The children's speech was rarely corrected or enlarged and adult patterns appeared little more than an elaborated version of the children's. Their sentences were short and simply constructed, containing few adjectives or adverbs. A considerable proportion of their speech was in the form of commands, or emotionally-toned remarks, such as 'Naughty', 'I am surprised at you!' and social phrases such as 'Jolly good!' and 'Oh pretty!' The meaning of the remarks of both adults and children was often implicit, as reference was made only to the familiar and to the immediate, so that no clear formulation was required.

Minimum verbalization was accepted by the nursery staff and no child was expected to repeat, clarify, or extend a statement. Often a single word, with a gesture, formed a request, yet 'Shoes' could be understood only in its context. Adults accepted their statements at face value as the children accepted theirs. Without the encouragement to verbalize, few remarks from the child developed into a conversation and often conversational overtures appeared to be deliberately discouraged.

As language is triggered off by the environment, a study of the environment of both home and school might indicate their richness and diversification. The pattern of the children's lives appeared to vary only within a circumscribed area and there was little variation among the social classes. In an environment rich in learning opportunities, their horizons did not appear to extend far beyond the shops and their streets. The nursery did not try to compensate for any experiential or cultural deficiencies. It appeared self-absorbed and contained and little reference was made to the world beyond its walls. The experiences presented during the day were invariable, the pattern of activities was repetitive and the equipment emphasized gross motor activity. The number of sedentary activities, the total time spent on them and the mean attention span bore no relation to the children's intelligence, verbal ability or social class (Table 3).

Table 3: The sedentary activities of the sample group

Child	*I Q*	*va*	*SC*	*Total Activities*	*Mean Time Spent* (mins.)	*Attention Mean Span* (mins.)
Sue	139	133	I	2	23	11·5
Jane	132	117	III	1	1	1
Anne	131	119	II	2	32	16
Jill	129	119	III	3	75	25
Margaret	129	124	III	15	58	3·8
Jack	127	105	II	9	35	4
Tom	122	111	III	8	51	6·3
Dick	121	102	III	2	7	3·5
Michael	120	91	III	4	86	21·5
Liz	116	97	III	5	38	7·6
Peter	116	106	III	3	20	6·7
Paula	116	106	IV	7	37	5·3
Carl	114	96	II	4	28	7
Tracey	108	110	III	8	31	3·9
Bill	103	104	III	4	28	7
Janet	103	106	III	3	8	2·7
Stan	97	89	IV	2	23	11·5
David	90	98	IV	3	43	14·3
Peggy	90	82	IV	2	22	11
Tim	82	98	III	3	10	3·3
Total				90	656	172·9
Mean				4·5	32·8	8·7

However, a mean attention span of 8·7 minutes for the sample group would appear adequate for such small children. It can be assumed, therefore, that these children, although predominantly occupied in gross motor activities, which made them appear restless and non-persevering, could give sufficient attention to an occupation if it attracted them. Only ten sedentary activities could be considered incomplete among the ninety performed, although the completion of fifty was difficult to assess.

A mean time of 32·8 minutes spent on sedentary activities during the three hours available for self-chosen activities may have been the result of limited adult interaction. The children were rarely encouraged to engage in sedentary activities through their initiation by the staff, or to persevere in them through adult verbal participation. On two occasions, a member of staff suggested an activity. Eighteen remarks were made to a total of ten children concerning the activity in which they were engaged. Seven examples of active participation were recorded, six occurring in the playroom and one in the playground.

This lack of interest in the children's activities was reflected in their diffuse terms of appraisal, which offered no encouragement for the improvement of technique or for the completion of a task. As their tasks were self-chosen, self-directed and familiar, they required no initial instruction by the adult, nor demanded the ability to recall or follow directions by the children.

The value of their self-chosen activities was doubtful. Awarded no adult support, either as an individual or as a group, they selected their activity at random. It was rarely matched to their experiential or ability level. The activity usually proved too familiar and there was no need for the child to modify his existing patterns of thought, or too incongruous and it was quickly abandoned. The absence of structure restricted the learning potential of many activities such as sand play, which became merely repetitive and purposeless.

Limited adult interaction was replaced by peer interaction in the nursery, which offered an opportunity for social development through the adjustment to a larger group than that of the family. However, the sample group showed few signs of developing social skills, nor did those members of Group B, who had spent a longer period in the nursery class, appear more socially mature.

The adult's conception of the value of pre-school education and of their role within it, determined the environment and the activities. To the headmistress and the nursery staff, its chief value lay in the social and emotional benefits from a contact with other children. Advantaged children would be encouraged to share, the disadvantaged provided with love and security. Improvements to the nursery would arise from more room and a covered play area. No mention was made of additions that might bring cognitive benefits, such as a higher child/staff ratio, a wider range of equipment, advisory assistance or the provision of relevant courses.

There was a general agreement on the effects of nursery education on their children by the heads and the teachers of the first infant class, in the three schools which possessed a nursery class. Each considered that nursery children, on entry to the infant school, were noisier, more restless and inattentive than non-nursery children, and usually less prepared in such school-related skills as the use of books and pencils and in the rudimentary ability to recognize numbers or write their names. After a few months, they settled down and no difference was then observable, socially or intellectually, between nursery and non-nursery children, throughout their infant career.

The investigation into the spontaneous behaviour of children in the nursery situation was followed by structured situations, in which the children were withdrawn, singly or in groups, with their activities. They were encouraged, chiefly through my questions, to verbalize as they manipulated the materials. Such stimulation provoked a substantial rise in the response rate although an increase in the number of individual responses with a decrease in the size of the group was inevitable.

The children's fifty causal explanations were provoked by my greater use of 'Why?' questions and the proportion of their answers rose as answers were expected and encouraged. The minimal attentional level was raised from one to six minutes. Their paintings, drawings and plasticine models acquired detail through verbalization, which encouraged and reflected their perceptual awareness.

Conclusion

An analysis of the spontaneous speech and behaviour of a sample of children in a 'typical' nursery class has indicated little relationship between their expected possession of a skill and the frequency with which they employed it. Able children did not demonstrate an ability, through their language form, to question and to come to terms with their environment. High socio-economic status, presuming cultural patterns which should influence their language mode, appeared to affect only the quantity of their responses in the nursery class, not the quality. This may have been due to the limited adult interaction; both adults and children appeared to consider the former's role as caretaking, rather than educative. The emphasis lay on random motor activity which did not appear to encourage the language and attentional skills necessary for success in the school situation. It is obvious that the results of this research cannot be generalized to all nursery classes or schools. Nevertheless, it may indicate that traditional nursery methods of child-initiated and often child-directed activity may not necessarily promote language development. Observation in the two nursery classes which completed the state nursery provision in the area, indicated a similar pattern.

The structured situation, although only a momentary interaction, had indicated the children's capability of using speech to discuss their environment and so to increase their perception of it. Yet speech requires encouragement and practice, if it is to be apposite, particularly in the 'disadvantaged' child. He may not otherwise learn how to use speech in order to understand the continually extending horizons that are presented to him in the school situation. This would suggest a re-orientation of the aims of pre-school education, the emphasis being transferred from social and emotional to cognitive and linguistic growth. This would involve deliberate interaction between the teacher and child, in which the former stimulated the child to question and to rationalise the environment through the materials which he manipulates. If nursery education is to be extended, it must first be ensured that what is provided is of value to all children and particularly to those who most need it.

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CREATIVITY

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Research which is relevant to the study of creativity over the last century is reviewed and reasons are suggested for the upsurge and recession of interest in creativity. Some barriers to research inquiry are examined. The relevance of approaches concerned solely with psychometric techniques are questioned, and the indiscriminate use of factor analysis is criticized.

Assumptions made about the 'Structure of Intellect' model are questioned, and the concept of an 'ability explosion' is used to illustrate an expanding view of intelligence. It is suggested that a reliance on psychometric methods in recent years has led to the neglect of introspective techniques and observation as a means of elucidating the nature of creative abilities.

It is now more than two decades since Guilford's famous Presidential Address to the American Psychological Association from which emanated a flood of research into creativity. The plethora of work since that time in a bewildering variety of disciplines related to education has produced every type of response. The very word is anathema to some; and at the same time it is a panacea for all the ills which beset our educational system to others. Has there, perhaps, been too much inquiry and search for the touchstone, and not enough stock-taking and reassessment?

When an exercise in evaluation and reappraisal of creativity research is undertaken, there is a tantalizing feeling that 'we've been here before'. It seems that we have not been studying creativity over the last two decades but spasmodically over the last century. This elusive, evanescent aspect of human behaviour has intrigued researchers since the days of Galton. Galton, a century ago, studying higher mental processes, devised a test of productive thinking, isolated special aptitudes of fluency, receptivity and intuition, and referred in his work to an ambiguous quality which he called 'zeal'. After these efforts, there was a lull. Spearman had formulated his *two-factor theory* with its basic assumption that general ability—which he called 'g'—accounted in large measure for differences in human performance. Garnett (1919), isolated 'a quality independent of "g"' which he called a 'c' or cleverness factor. This quality, he said, when combined with 'g' in different proportions, 'constitutes humour, originality and quickness of apprehension.' Was Garnett grappling with the creativity syndrome? At about the same time, McDougall may well have been. He added to Galton's list, 'productive or deviant association'. He also saw creative behaviour occurring in people whose neural systems, 'are more closely interwoven, sub-systems becoming freely associated with principal systems.' In these studies there is more than a hint of Koestler's (1964) bisociation theory which sees creativity as one possible result of drawing together two unusual frames of reference. The work also has a ring of the more recent physiological inquiries undertaken by Grey Walter and Hebb. The similarity is in the attempt to explain the nature of creative response by studying the physiological changes which occur in neural systems when responses are made to appropriate stimuli.

The work, however, remained sterile. Vacillation followed. Somehow, the scent was lost. The next re-kindling of the flame came in 1927 when Hargreaves (1927) isolated his 'f' factor. This attribute of fluency and its association with creativity we had seen before and are to meet subsequently. Hargreaves' 'essential element in imagination' produced a stir at the time but lingered on in an ailing state until it was finally laid to rest by Burt (1949) with the rather cutting remark that it was only a similar element to that identified by him *earlier* as productive imagination or inventiveness. So even before 1927, Burt had worked in this field but had not developed his ideas and brought them to satisfactory fruition. Indeed, Burt's post-1950 role in the creativity debate was to be one of severe critic of many of the pronouncements. Spearman was also active in the search for the key to the creative ability problem. In 1930, he published his book *The Creative Mind*, and as one would expect in the climate of opinion existing at the time, he concluded that 'no such special creative power exists'. He infers that imagination, in the sense of creativeness or originality depends solely on the neo-genetic principles of intelligence. In this view, he seems to be a precursory critic of work by Getzels and Jackson (1962) over 20 years later. The saga seems to show that for a hundred years, creativity research, or something hinting at an inquiry into the nature of creative abilities, has promised much on many occasions and then floundered. After 20 years of more sophisticated research, have we once again reached this impasse? If we have, what is the barrier we meet? I wonder whether it is *individual cognitive style*, the particular and personal approach to problem solving adopted by each one of us, where, given the same problem, individuals solve it in their own inimitable way. Has the omnibus title 'creativity' been a red herring which has restricted creative psychological thinking? Should we not have been seeing creative behaviour as a complex syndrome involving many modes of thinking and many variables outside the control of traditional experimental design? In England, the work may have been too heavily loaded on the examination of relevant cognitive factors while the affective elements of any creative endeavour have been relatively untouched by sustained inquiry.

Even in the cognitive field, I believe we may have been too influenced by an insistence on psychometric exactitude. Most depth studies of the relationship of intelligence and creativity have involved techniques of factor analysis. Are these techniques the psychologist's 'golden-rule' or his 'divine proportion' in Platonic terms? Rather, instead of leading to new insights, the use of factor analysis has involved us in a pathology of creative abilities instead of their imaginative furtherance in the educational system. It has produced thinking more akin to the surgeon's approach than the physician's; a dissecting, rather than a restorative and generative effect.

Factor analysis, used indiscriminately with a variety of amorphous pseudo-measures which usually accrue from creativity inquiries, may now be too efficient for the data. The super-efficient rotations and the computer exactitudes are merely returning the related data to us without adding much to its clarification. When factor analysis was developed as a piece of hand-worked creative mathematics, human decisions were taken concerning the placement of factors taking account of the nature of the measures used. Now, all these decisions are made on general principles at the programming stage and consequently, all data is treated alike. Many of the decisions made at the programming stage seem inappropriate to the kind of material which is concerned with the measurement or assessment of creative abilities.

The 'structure of intellect' model, which is the starting point for so many assumptions made in subsequent creativity research has broken down abilities into different components in an extreme way. In this speculative, theoretical model, Guilford proposed 120 mental factors of which he claims to have isolated more than 80. Vernon (1960) has criticised this stereotype and the factor-analytic approach from which it is derived. His view has been that 'abilities are continually shifting and developing, becoming diversified or interconnected, depending on people's education and their out-of-school experiences and they can be classified and sub-classified in a variety of ways.' The nature of creative abilities is such that they are seldom static and consequently difficult to identify as units. Thus they present special problems unlikely to be solved by traditional experimental designs. In this area more than any other, the 'hidden variable' of the researcher's own predispositions and prejudices may be a significant factor especially where the variables in question cover a wide range of abilities, and are themselves complex.

Emanating from the 'structure of intellect' model, Guilford's 'primary traits of creativity' (1959) have been the basis of many assumptions made by subsequent researchers. These hypothesized traits of creative thinking are at the bases of assessment principles in most attempts to measure creativity. They are accepted uncritically by many researchers in spite of the fact that they have been severely questioned. Burt (1962) points out that it is dangerous to assume that primary abilities exist. His view is that these abilities are themselves highly complex and capable of further factorizations into a number of constituent sub-factors. My own work (Foster, 1971) produced evidence to support this. In my study, it seemed that primary abilities could be mutually inclusive; for example, fluency of response could often mask flexibility and originality of thought, depending on the criteria used to assess fluency. Assumptions have been made concerning the validity of the primary traits which may be unwarranted. They have some specific validity when related to the identification of abilities in the structure of intellect model. Whether this validity is transferable into a variety of different testing and evaluation situations is open to doubt.

It seems that in the wake of the jobs, knowledge and population explosions, we may be experiencing educationally what I have called (Foster, 1971) 'an ability explosion'. This concept suggests itself as an apt way of illustrating that the idea of ability must be pluralized, and that intelligences, creativities, and abilities must be the bases of thinking about the nature of intellect. This idea of the expanding concept of intelligence is very important to the educator. It can be seen in Guilford's structure of intellect model where the implication is clearly that 'there are many different ways of being intelligent'. The ability explosion can also be seen in the most recent version of the hierarchical structure of intelligence proposed by Vernon (1969). Many of the specific abilities at the bottom of his hierarchical structure may be regarded as creative and could possibly be represented in the modular structure as 'c' to denote creative abilities, as distinct from 's' to denote specificity only. They would still owe some variance to the abilities higher up the structure, but they would be many in number, and might include both logical and creative abilities in their different specificities.

Many of the points discussed in this article support a view that a purely psychometric approach to creativity study may be inappropriate. The work of Jackson (1968) subsequent to his intensive study of creative abilities with Getzels (1962) supports this view. In *Life in Classrooms*, Philip Jackson highlights the value of observational techniques in studying creative behaviour and shows that rigour and objectivity can be applied to the method. This has been a neglected technique in recent research in the field and yet it may lead to new insights and be a more appropriate research method. There is certainly evidence to sustain this view. Koestler (1964) and Ghiselin (1955) both adopted introspective and report techniques, the results of which had an illuminating effect on the nature of the creative process.

Perhaps the most successful study of creative abilities carried out in England in this century was Susan Isaacs' (1930) work at the Malting House School. The word 'creativity' does not figure in her reports but who can deny the contribution she made to the function of the teacher in modes of eliciting creative responses? In a recent paper, Armytage (1972) suggests another technique which certainly presents a method of study under-used in research into creative abilities. He advocates more use of introspective techniques to elucidate better approaches to subsequent learning. In this way, the pupil may become his own agent in identifying his individual cognitive styles, and the approaches which are best for particular activities. Professor Armytage sums up this by saying, 'A simple autobiography can serve as a mental gymnasium whereby the student can organize his experiences and see himself better.' He also recalls the work of Strang (1939) from over 30 years ago. She counsels, 'If I had to choose two of the many methods of understanding human behaviour, I would choose observation and the autobiography.' The problems we face today using these techniques are complex but they are not insoluble. The techniques themselves may be a vehicle which, when allied to other research methods, may yet provide us with the further imaginative innovation we require in the study of creativity.

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COEDUCATIONAL AND SINGLE-SEX SCHOOLING AND HAPPINESS OF MARRIAGE

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THE AIM was to determine whether attendance at a coeducational or single-sex school was associated significantly with happiness of marriage. The questionnaire method was used, and it was distributed via GP doctors for postal return. Subsidiary questions on social class, type of schooling (Grammar, Modern, etc.), religious denominations etc. were asked so as to make a preliminary investigation into other factors affecting happiness of marriage.

The most important finding was that for those who spent five years or more in any type of secondary school, the coeducational group had significantly higher happiness scores, both for men and for women. Subjects believed strongly that coeducational schooling helped them in making a happy marriage, and in their everyday relationships with the opposite sex.

Introduction

Several researches have been carried out to evaluate the relative merits of coeducational and single-sex schools from the point of view of academic success, but the important influence of these types of schools on emotional development is relatively uncharted. The opinions of teachers, pupils and lecturers in education have been classified, especially by Dale (1969, 1971), but a more objective measure appeared to be called for; marital happiness is one such factor and was used as the main criterion in this research.

Method

The questionnaire method of inquiry rather than the interview was used in order to obtain the maximum information using a small budget and it is hoped that the follow-up work will be done by interview methods. A minimum response from 1,000 men and 1,000 women was aimed at and the questionnaire was made anonymous to encourage honesty in replying to questions of an emotional nature. A modification of Chesser's method of asking GP doctors for their co-operation in distributing the questionnaires to a cross-section of their patients was used.

A pilot survey yielded compliance by 57 per cent of doctors approached and 56 per cent of questionnaires distributed were returned. These return rates were considerably higher than usual for postal questionnaires and suggest that doctors' co-operation may have been a crucial factor.

In the main survey, 2,272 doctors all over England and Wales and Scotland were approached and 890 agreed: a good agreement rate of 39·8 per cent. Twenty-one of the replies were too late or equivocal, so 869 doctors were sent a second letter, thanking them and asking them to distribute eight questionnaires, four to men and four to women, all aged under 50 (but not husband and wife) but otherwise unselected. The response from doctors so greatly exceeded expectations that the number of questionnaires per doctor had to be reduced successively to six and then to four.

The questionnaire itself asked the respondent

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An interim report while the work was still incomplete was published in *Where* (1966), 28, 25, and I am grateful to the Editor for permission to publish some material mentioned in it.

to fill it in on his or her own, in private, without signing, as anonymity was stressed, as was the potential value of the research to other people. Individually stamped addressed envelopes for reply were enclosed.

The sample

In all 6,232 questionnaires were sent out and 2,536 replies received: 1,116 from men and 1,420 from women; possibly women may have been less inhibited than men in expressing their feelings. Overall this was a very favourable return rate of 40·9 per cent giving good geographical spread over England, Scotland and Wales, though London was over-represented. In spite of the instructions not to give forms to the over 50s, some over 50s replied. The sample gave a reasonable age spread though the 31-40 age group was over-represented.

Social class was judged by occupation of the husband, graded according to census categories; the professional classes proved to be considerably over-represented; the skilled and unskilled working classes progressively under-represented. Similarly, the sample was over-represented by those who stayed in secondary school five years or more and under-represented by those who had been three years or less.

The sample therefore appeared broadly representative of the whole population in geographical location and age range but not in occupational classification or length of education. A small number of cases (9 men and 29 women) whose schooling could not be regarded as purely coeducational or single-sex were disregarded in succeeding calculations.

Comparison of the coeducated group with the single-sex school group showed no appreciable urban-rural bias or age bias. As regards length of marriage, there were relatively more coeducated in the 6-10 year group and more single-sex educated in the 11-20 year group, but any resulting bias was probably small.

Table 1 shows that there was considerable occupational class bias in favour of the single-sex educated group.

Table 2 shows that there was bias in favour of the single-sex educated in type of school attended.

Table 3 shows that there was further bias in favour of the single-sex schools, in the length of schooling. On the other hand, a higher proportion of single-sex pupils were boarders: 17·7 per cent of men and 14·2 per cent of women as compared with 1·6 per cent and 0·7 per cent respectively for coeducational school pupils.

In view of these differences, the 'raw' scores of coeducational and single-sex school groups should be treated with caution.

Table 1: Comparison of coeducational and single-sex educated groups by occupational class

Occupational Class	*Men* Coed %	S/Sex %	*Women* Coed %	S/Sex %
I. Professional, etc.	19·3	32·6	13·3	23·2
II. Intermediate	28·0	34·3	29·8	30·5
III. Skilled	43·8	28·8	46·9	38·4
IV. Partly skilled	6·1	2·7	5·5	4·2
V. Unskilled	2·4	0·8	1·7	1·5
VI. Others	0·5	0·7	2·8	2·2

Table 2: Comparison of coeducational and single-sex educated groups by type of secondary school

Type of School	*Men* Coed %	S/Sex %	*Women* Coed %	S/Sex %
Elementary+Central+ Higher Grade+ Secondary Modern+ Scottish Junior Secy.	51·9	29·7	55·0	35·6
Grammar+ Scottish Senior Secy.+ Technical+ Comprehensive+ Multilateral+Public	44·7	65·2	40·8	44·4

Table 3: Comparison of coeducational and single-sex educated groups by length of secondary schooling

Length of time in Secondary School	*Men* Coed %	S/Sex %	*Women* Coed %	S/Sex %
4 years or less	59·6	32·0	61·5	37·1
5 years or more	37·7	66·9	36·6	61·2

The questionnaire

Pioneer work on the measurement of marital happiness was done by Terman in California (1938); his work was paralleled by that of Burgess and Cottrell (1939) also in the USA, and followed up and anglicized by Chesser (1956) in the UK. Chesser's form of questionnaire was used with very minor modifications to remove ambiguities and with a simplified scoring system such that the battery gave a numerical result ranging from 27 (happiest) to 0 (most unhappy). The main item of the battery was a subjective rating of happiness of marriage: Exceptionally happy, Very happy, Happy, Fairly happy, Unhappy, and Very unhappy. Other items related to degree of husband-wife agreement or disagreement about various matters; methods of settling disagreements; degree of mutual confiding; outside interests together; regret as to marriage; wish to change partner; length of unhappiness; and thoughts of separation or divorce. Items were weighted according to their correlation with other items and to their husband-wife correlation, on the principal of internal consistency.

Subsidiary questions asked for details of type of occupation in order to assess social class, as already explained; type of school (grammar, modern, etc.); whether day or boarding; length of full-time secondary schooling; schooling of spouse—coeducational or single-sex; presence of sibling of the opposite sex in the family; further education (full-time or part-time); membership of youth club; attendance at place of worship; broken engagement; and length of marriage: in order to make a preliminary investigation into other factors affecting marital happiness.

The answers to all questions were transferred to Copeland-Chatterson punch cards, and the various groups selected by hand sorting with needles. (Computer help was not available at the start of the work.)

Results

The happiness scores generally were bunched together at the top end, showing that most people who answered the questionnaire thought they were happily married. The main groups were then compared as in Table 4: men coeducational with men single-sex, and women coeducational with women single-sex. In both cases the coeducational group scored higher, but the difference of means divided by the standard error of the difference gave a critical ratio just below significance level (·05) for men, and rather more below for women.

However, it was noted that overall men scored higher than women; this may mean that men really were happier on average, but it has to be borne in mind that fewer men than women replied—possibly because of inhibition about revealing their unhappiness.

An alternative method of assessing marital happiness was taken: to compare the proportions of divorced, and of separated and divorced in the coeducational and single-sex educated groups. For men, the coeducational group appeared to have a definitely smaller proportion of divorces, but the difference was not statistically significant by chi-square tests. When men as a whole were compared with women as a whole, the proportion of women admitting divorce or separation was higher than the proportion of men, significant to ·01 level; this again suggests that women may be less inhibited than men in admitting failure or unhappiness. For both men and for women, there was a lower proportion in the coeducated group admitting to broken engagements, but the difference by chi-square test fell below significant level.

In view of the forms of bias regarding type of school (grammar, modern, etc.), length of schooling, and the day/boarding dichotomy, a comparison was made between similar sub-groups (e.g. grammar school) of coeducational and single-sex educated groups. The most important single finding was that for those who had been in secondary school for five years or more, the coeducational group scored significantly higher marital happiness scores than the single-sex educated group (Table 5).

Table 4: Comparison of mean happiness scores of main coeducational and single-sex educated groups

Sex	*No. in Group*		*Mean Happiness Score*		*Critical Ratio*
	Coed	S/Sex	Coed	S/Sex	
Men	379	728	23·214	22·699	1·89
Women	541	850	22·259	21·921	1·04
Men & Women	920	1,578	22·652	22·280	1·70

Table 5: Comparison of mean happiness scores of coeducational and single-sex educated groups who had attended a secondary school for five years or more

Sex	*No. in group*		*Mean Happiness Score*		*Critical Ratio*	*Significance Level*
	Coed	S/Sex	Coed	S/Sex		
Men	143	487	23·769	22·614	3·01	·01
Women	198	520	23·202	22·123	2·56	·02
Men and Women	341	1,007	23·440	22·360	3·74	·001

Similar statistically significant results in favour of coeducation were obtained for the grammar school-educated (including Scottish senior secondary schools), and also for all the 'privileged' sector (grammar + Scottish senior secondary + technical + comprehensive + multilateral + public + private). There was no statistically significant result in the case of those staying on in secondary school for four years or less, or for the 'underprivileged' group of Secondary modern or Elementary schools. Taken together, these results suggest that where secondary schooling is prolonged into late adolescence, with all its extramural activities and demands on time for homework, cutting out at least some social activities in the evenings, the prolonged segregation of the single-sex school may be harmful to the chances of making a happy marriage. This finding reinforces the verdict of Miller (1969) on the basis of his findings in the Tavistock Clinic Adolescent Unit, that 'single-sex schools were tolerable when any boy or girl could spend the rest of the time in a stable mixed environment. But when a wide range of other people is no longer available outside, it is possible that single-sex education is a psychologically harmful setting likely to damage personality development'.

The less striking difference for women may be due partly to the smaller numbers staying on in secondary school for five years or more compared with men, and partly to a lower proportion of those at boarding schools with their extreme segregation.

Convent-educated women were compared with non-convent educated (Table 6): the convent girls scored lower than others, significant to ·05 level—again reinforcing the finding that extreme segregation is harmful. Moreover, even when the convent-educated were removed, the coeducational group of grammar school educated women scored more highly than the single-sex educated group, significant to ·05 level.

One interesting finding was that for those who had been married for over 10 years, there was a difference in favour of the coeducational group significant to ·05 level for men; ·05 level for women; and ·01 for men and women combined. This may mean that after ten years the truly happy marriages have been sorted out from the unhappy, and that coeducation is superior; or that in the somewhat more rigid social conditions of earlier years coeducation was especially valuable in promoting mixed relationships; or possibly both. For women who had no brother in the home during teenage years, there was a difference in favour of coeducation significant to ·02 level; but no significant comparable difference for men without a sister in the home; this finding again probably reflects the smaller social contacts of women in previous days.

For those who underwent full-time further education, there was a difference in favour of

Table 6: Comparison of mean happiness scores of convent-educated with other women

Type of School	*No. in Group*		*Mean Happiness Score*		*Critical Ratio*	*Significance Level*
	Convent	Non-Convent	Convent	Non-Convent		
S/Sex (Girls)	21	808	19·286	22·005	1·99	·05

coeducational secondary schooling significant to the ·02 level for men and women combined; for those whose full-time further education was single sex, the difference in favour of coeducational secondary schooling rose to the ·01 level. There were similar findings in favour of coeducation for those who had undergone part-time further education, but more highly significant: to ·01 level for all, and to ·001 level for those who had single-sex part-time further education. For men who had not attended a youth club, there was a difference significant to ·001 level in favour of the coeducational group. All these findings together suggest that, particularly where there may for any reason be a paucity of heterosexual social contacts, coeducation is conducive to marital happiness.

Next the association of factors other than the coeducational-single sex school dichotomy with happiness of marriage were investigated.

Women of occupational classes 1 and 2 combined scored more highly (significant to ·001 level) than women of classes 3, 4 and 5 combined: in other words, higher social class gave a better background for marriage. For men the difference was in the opposite direction but not statistically significant: possibly the greater prevalence of boarding education in the higher social groups may have affected the scores: indeed, for men, class I scored the lowest, probably for this reason.

There was a similar finding of significantly higher scores (to ·02 level) for women from the 'privileged' group of grammar etc. schools as compared with the 'under-privileged' secondary modern etc. group, and a non-significant one in the same direction for men. For women, the maintained-grammar-school educated scored significantly higher than the 'private' (public + private) group, and for men there was a non-significant difference in the same direction.

Both men and women educated in day schools scored higher than those in boarding schools—for men the difference was significant to ·02 level, while for women it fell below significance, probably because the numbers were small. This finding again strengthens the case against the extreme segregation of many boarding schools. Women spending 5 years or over in secondary school scored higher (·02 level) than those spending 0-4 years; for men the difference in the same direction fell below significance.

Full-time further education for women was associated (·02 level) with happiness of marriage, probably because of the contacts it afforded, and so also was attendance of women at mixed youth clubs as compared with single-sex ones. Men from single-sex schools who attended any youth club (mixed or single-sex) scored higher than those who did not (significant to ·01 level).

Finally, both men and women aged under 30 scored more highly than those over 30 (·001 level); and those married 0-10 years scored more highly than those married over 10 years (men significantly to ·01 level, women to ·001). These findings probably reflect favourably on the greater freedom of mixing of the sexes in modern days.

Among religious people, Presbyterians and Nonconformists scored higher than non-religious, significant to ·05 level for men but a little short of significance for women; for men and women together the figure reached ·01 level. Roman Catholic women scored significantly lower than Protestant women (·01 level) or non-religious (·02 level). Quite possibly fear of unwanted pregnancies and worry over issues to do with birth control may have contributed to the Roman Catholic women's low scores; it is also possible that the Roman Catholics being of relatively low social class may be a partial explanation, as may the low score of the convent-educated. Jewish women also scored lower (·05 level) than non-religious; possibly many may have been immigrants and so in unfamiliar surroundings. Anglicans' scores, both men and women, were not significantly different from those of non-religious. A relatively high proportion of both Anglicans and Roman Catholics were boarders, and this may have tended to depress their score. In this survey overall, the democratic Nonconformist structures would appear to have been the most conducive to happy social contacts and marriages.

Both men and women without a broken engagement scored clearly higher (·001 level) than those with a history of one.

Finally, people's own opinions were asked as to whether the type of schooling they had undergone had helped or hindered their everyday relations with the opposite sex, with results as shown in Table 7.

Table 7: People's opinions as to the helpfulness of their schooling in everyday relations with the opposite sex

Sex and Type of School	*No. in Group*	*Helped* %	*Hindered* %	*Neither or Don't Know* %	*Not Stated* %
Men Coeducational	379	70·7	1·8	26·4	1·1
Men, Single-Sex	728	9·2	35·6	54·1	1·1
Women, Coeducational	541	72·3	2·0	23·8	1·8
Women, Single-Sex	850	10·8	30·8	56·5	1·9

Table 8: People's opinions as to the helpfulness of their schooling towards making a happy marriage

Sex and Type of School	*No. in Group*	*Helped* %	*Hindered* %	*Neither or Don't Know* %	*Not Stated* %
Men, Coeducational	379	47·2	1·1	50·7	1·1
Men, Single-Sex	728	12·6	8·4	77·3	1·6
Women, Coeducational	541	41·6	0·9	55·1	2·4
Women, Single-Sex	850	11·8	6·5	79·8	2·0

For men and for women the differences were significant to ·001 level by chi-square test.

In response to similar questions as to whether or not their schooling had helped or hindered their making a happy marriage, the results were as shown in Table 8.

For men and for women the differences were significant to ·001 level by chi-square test.

Conclusions

People's own opinions were strongly that coeducation at the secondary stage was helpful towards good everyday relations with the opposite sex, and towards happiness of marriage. The latter opinion was borne out by the significantly higher happiness scores of former pupils of coeducational schools over single-sex schools where secondary schooling had lasted 5 years or more.

That prolonged segregation of the sexes might be harmful was further suggested by the low happiness scores of convent-educated girls, and of boarding-school educated men; this result was in line with clinical findings elsewhere. Several other sub-groups investigated (e.g. grammar school educated) gave significantly higher happiness scores for the coeducational group over the corresponding single-sex educated group, and we may tentatively conclude that coeducation is associated with marital happiness.

Insofar as there is a tendency for secondary schooling to be prolonged the findings suggest that the spread of coeducation is psychologically desirable, but further studies both of a questionnaire and of an interview nature to follow this pioneer study are urgently needed.

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THE INFLUENCE OF LEARNING TECHNIQUES OF PROGRAMMED INSTRUCTION ON TEACHING PERFORMANCE IN SCHOOL

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Does training a teacher in the techniques of programmed learning improve his performance as a teacher in the classroom? Does this apply to all kinds of teaching regardless of the age group of children taught? The experiment described here was designed to test the effect of training in programmed learning techniques based on Mathetics on student-teacher performance at five levels of teaching. The five groups of students were instructed in Mathetical programmes before teaching practice and the grades assigned by schools and supervisors were compared with those of a control group who received only a normal preparation for school practice. Whereas almost half the students in the test groups were rated high achievers, less than a third of the control group were considered 'good'. Regarding the second question, there was evidence that teaching performance was improved throughout levels of schooling from infant to secondary.

Introduction

It has often been suggested that training teachers in the techniques of programmed learning might have, as an additional outcome, improvements in their performance as classroom teachers. (e.g. Lysaught and Williams, 1963; Rose, 1971). In other words, it has been considered possible that learning how to prepare programmed materials might transfer to the kind of 'live' teaching preparation which is the purpose of teacher training and teaching practice. Indeed, it was reported to the National Centre for Programmed Learning that the standard of classroom teaching among experienced teachers, following its in-service courses, was observably raised.

While it seems highly likely that such a transfer takes place, informal evidence based on the opinions of education advisors, the personal impressions of teachers and the plausibility and cogency of arguments are no substitute for the findings of empirical inquiry. Unfortunately, however, there is a paucity of research on this question. Moreover, though this introduction has suggested that the weight of opinion is favourable, there is also a strongly held view that learning about programmed instruction would be inimical to some forms and stages of teaching. In particular it would be held by many educators that active, learner-centred, individual or group methods which encourage spontaneity and creativeness in children are likely to be poorly served by knowledge of programming.

Thus it seems possible that some kinds or levels of teaching might be helped by learning the skills and principles of programming while other kinds of teaching (for example, of young children in Infant and Junior schools) might not benefit.

Reasons for these points of view can be derived readily from the essential features of programmed learning. Thus one standpoint sees careful formulation of objectives in measurable terms, analysis of learning tasks into manageable and appropriate forms, insistence on active responding, provision of feedback to pupils and revision and validation of teaching materials as a good foundation for the practice of teaching. The other position, however, sees the provision of pre-arranged teaching materials as stifling to initiative and stereotyping to opportunities for learning. It considers programming to be contrary to the flexible procedures of learning by discovery, the active pursuit of individual interests and the social interaction of group projects which it advocates.

Elsewhere, the first author has pointed out that there is not necessarily an opposition between this conception and programmed learning unless the latter is narrowly conceived (Leith, 1966; 1971). Nevertheless, the question whether the learning of principles of programmed instruction will enhance the teaching of Infant-level student-teachers or that of students training for higher levels of schooling is undetermined.

The experiment

The experiment was designed to test the hypotheses that instruction in techniques of programmed learning (*a*) transfers to the classroom-teaching situation, and (*b*) raises the level of teaching performance of student-teachers, irrespective of the age-group of children taught.

Five levels of schooling covering the full range of age-groups from 5 to 16 years were included in the experiment—Infant, Infant-Junior, Junior, Junior-Secondary and Secondary. Each of these levels, except the Secondary, contained two groups of students, assignment to groups being by a procedure approximating to randomisation (alternate names on a list). One of the groups at each level was allotted randomly for training in programming techniques, and half of the secondary students were randomly allocated to the experimental treatment. In all, the number of students selected to receive training in programming principles was 100. The other set of students (the controls) numbered 108. Together they comprised the entire second-year complement of a college. The five experimental groups received their training before entering a four-week period of teaching practice in schools. The control students were given the course after the school practice.

The programmed learning course

The course in programmed learning was given as a self-contained unit which occupied five two-hour sessions. The programming techniques taught were based on Gilbert's Mathetics (1962) Mathetics (from a Greek word meaning 'to learn') is a set of principles and techniques for organizing effective learning situations. It distinguishes several kinds of learning in order to analyse tasks. One of these is *chaining*, or linking together sequences made up of the basic unit of learning—a connection between a stimulus and the response which is made. The response itself, evokes stimuli which are hooked up to a further response, etc. Stimulus-response units can be very large, complex performances or tiny segments depending on the level of analysis required. In working out the best means of learning a chain (almost any consecutive series of acts) Gilbert suggests that it is often best to present the sequence of learning in reverse order. For example, the nurse learning to give a hypodermic injection starts by removing the needle from the (simulated) patient and dismantling the syringe, then she injects, removes the syringe, etc. This gives immediate success, reinforces earlier steps, when they are performed, and allows *completion* of the task each time, since the series of steps is always repeated to the end.

Gilbert distinguishes a second type of learning (multiple discrimination). This is when we have to learn things which are easily confused such as foreign language vocabulary lists or diagrams with many confusable labels. For this contingency he recommends learning all the elements at once—but with the aid of mnemonics. Finally, *concepts* are recognized as requiring particular methods.

From these analyses and methods of facilitating learning it is possible to work out which kinds of pupil activity are needed for different segments of a curriculum and how to design the learning situation.

Unlike linear and branching programmed learning methods there is no reference to small or large steps, to teaching machines, etc. Mathetics allows the programmer to escape from the restrictions of print to a wide variety of classroom activities.

The first of the five two-hour sessions concentrated on objectives. In the second, sets of objectives prepared by the students were discussed. Following this, Gilberts' categories of learning were illustrated with specially prepared materials. These exemplified the methods of teaching chains, multiple discriminations and concepts and each student was provided with a guide to the preparation of Mathetical programmes (Leith, 1970). The fourth and fifth sessions were devoted to preparation of programmes in small groups and empirical try-outs of completed materials. Outside work was done in addition to the timetabled time. The range of topics chosen by students included equal addition and decomposition methods of subtracting, using a dictionary, making an emergency call from a public telephone box, angles, writing a cheque, playing a tune on the piano and crocheting, each one being appropriate for the age-group taught.

Mathetics techniques were chosen because their approach to task analysis, emphasis on preventing interference and readiness to employ simulations, apparatus and illustrations makes them adaptable to many kinds of teaching situations.

Five groups of students were taught between the beginning of the academic year and the beginning of the school practice period which took place in the second half of the Spring term. The first group therefore had an interval of four months between the course and the practice. The other four groups were spread out over the time, the last one completing its sessions just before the teaching began.

The control group students were given Mathetics training after the practice. In all other respects they received the same preparation for practical teaching. Thus all of the students in the second year had specific tuition before teaching in which, having decided on their teaching duties in school, they prepared schemes of work with education tutors and subject specialists. They took a number of courses aimed at practical aspects of teaching, their education and subject courses contained much relevant work on organization and presentation and they had particular preparation for the tasks they were to carry out.

Evaluation of teaching

The assessment of teaching performance was made by the schools and the college supervisors. There were three categories of judgement corresponding to 'Good', 'Average' and 'Poor' as a teacher. This system and its criteria and standards had been operated for more than five years and were familiar to the teachers involved. Each student's rating was the result of consideration by the classroom teacher, department head, headteacher and two supervisors, the college tutors having students spread over several schools. Over sixty tutors were involved in supervision and assessment, overlapping each other to give consensus and consistency from school to school.

Neither tutors nor schools were aware that half of the students had received an experimental training as preparation for the practice. Nor were they aware that the ratings would be the subject of experimental comparison.

Findings and analysis

In order to determine whether students who received training in Mathetics were better as teachers than those who received the normal preparation for school practice the frequencies of students awarded each of the three grades were analysed (Table 1).

Table 1: Percentages and frequencies of students in experimental and control groups achieving high, average and low teaching practice grades

	TEACHING PERFORMANCE						
	High		*Average*		*Low*		
GROUP	%	N	%	N	%	N	TOTAL
Mathetics	46	(46)	42	(42)	12	(12)	100
No Mathetics	28·7	(31)	58·3	(63)	13	(14)	108
Both	37·3	(77)	50·2	(105)	12·5	(26)	208

$$\chi^2(2\ df) = 6{\cdot}96;\ p = {\cdot}03$$

A chi-squared test indicates that the probability of differences as great as these arising by chance is relatively small ($p=.03$). Inspection of the table reveals that there is the same small proportion of low marks in each group and that the difference is accounted for by the relatively greater number of students awarded a high grade in the Mathetics group, while the group without Mathetics is compensated by having a greater proportion in the average grade. In other words the effect of training in Mathetics was a transfer of learning to teaching performance which resulted in almost half of the students having high achievement, whereas less than a third of those not so trained attained a rating of 'good'.

As may be expected a t-test of the difference between the mean scores of the groups (converting categories to numerical values) gives a similar result. Predicting in advance that the Mathetics group would be superior, the difference is significant at less than the 0.25 level of probability.

The second hypothesis—that there will be no interaction of treatments and levels of schooling—was assessed by means of analysis of variance after converting the nominal rating categories into scores by assigning 3, 2 and 1 to high, average and low, respectively. Mean scores are given in Table 2.

Table 2: Mean teaching grades of students training for five levels of schooling

GROUPS		LEVEL OF TEACHING *Infant*	*Inf/ Jnr*	*Junior*	*Jnr/ Sec.*	*Secondary*	*Overall*
Mathetics	$\bar{X}$	2·26	2·59	2·16	2·50	2·40	2·38
	n	(19)	(22)	(25)	(24)	(10)	(100)
No Mathetics	$\bar{X}$	2·12	2·04	2·30	2·12	2·27	2·17
	n	(25)	(23)	(23)	(26)	(11)	(108)
Both	$\bar{X}$	2·19	2·32	2·23	2·31	2·34	2·28
	n	(44)	(45)	(48)	(50)	(21)	(208)

Since the numbers in sub-groups were unequal, a method of analysis adjusting for disproportionate frequencies was used (Walker and Lev, 1953). The results of the analysis are summarized in Table 3.

Table 3: Analysis of variance

SOURCE	*df*	*ms*	*F*	*P*
Treatments	1	·1123	4·90	·05
Levels	4	·0078	—	N.S.
Interaction	4	·0236	1·03	N.S.
Error	198	·023		
Total	207			

It will be seen that the difference between treatment groups is significant in this analysis, also. What is of particular interest in the table is, however, the interaction effect. If the interacti were significant it would indicate that Math tics has a beneficial influence on teachi performance at some but not all levels. Since falls a long way short of significance it may inferred that there is no evidence that any level schooling benefits more or less than the othe The fact that one group (Junior) does not co form to this conclusion in no way detracts fro the inference, which is based on an assessment probability. Indeed, one must expect an occ ional deviation from a general pattern to occur chance. In the present instance, moreover, th is a straightforward explanation which see justified. It was the Junior group which trained first of all. They were thus not o submitted to the method on its first trial suffered the longest delay between the course a the teaching practice (four months).

Discussion and conclusions

The results of the experiment confirm hypothesis that learning about and applying principles of Mathetics (which is a form programmed instruction) transfers to teach performance in school as rated by convention teaching-practice assessment methods. They support the point that the transfer takes plac the performance of students teaching the range of age-groups from Infant School Secondary School children. In drawing conclusion it must be pointed out that the ass ment of students in Primary Schools (5–11 ye was in terms of teaching appropriate to this le In other words the advantage gained by Inf level students was in applying Infant Sc methods, whereas those teaching in Second School were judged on Secondary School cri of teaching.

It can, therefore, be affirmed that the teach of principles of programming (at any rate in form described above) can make a contribu to teacher education not only by increasing pool of teachers who are able to construct grammes or who know how to integrate grammed materials into their everyday teach but by raising the standard of teaching pe mance. A recommendation to include prog ming techniques in the curriculum for tea seems to be justified.

The course of instruction which was the basis of e experimental treatment lasted approxi- ately ten hours with additional work on the part students outside the formal sessions. Whether ore or less time spent on programming would ve the same or a better result cannot be de- rmined from this experiment. Nor can other proaches to programmed learning be claimed be effective, though, on general grounds, they ay be expected to be helpful.

The approval of students for the training may so be advanced in support of the method. While formal evaluation of attitudes was made the any, spontaneous, appreciative comments rein- rce the providers of the course in the resolve to ntinue. It is a positive incentive to hear that udents see the relevance of the course to lesson reparation. It is even more reinforcing when students voice the wish that they had experienced the course before going on their first teaching practice.

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MONTH OF BIRTH, AGE AND EARLY SCHOOL PERFORMANCE

ANDREW S. KERR *Victoria Mental Health Centre, British Columbia, Canada*

THIS RESEARCH note reports an investigation into the relationship between date of birth and ear performance at school and especially into whether there were more 'poor achievers' born during th summer months than in other months. A sample of 'poor achievers' was compared with a number 'average' pupils, all selected on the basis of teacher reports. Contrary to previous research evidenc there was *not* a significantly greater number of poor-achieving children born between May and Augus The influence of one starting date for school entrance is discussed and implications for other schoo systems are raised.

The influence of children's date of birth on their educational progress has been studied closely (e.g. Jackson, 1964; Jinks, 1964; Johns, 1962; Williams, 1964) and summarized by Choppin (1969). It was found that, generally speaking, a larger proportion of the lower achieving stream children tended to be born during the period May to August, i.e., towards the end of the scholastic year.

Freyman (1965) states that the evidence accumulated can leave no doubt about the educational, social and psychological disadvantage of a large number of children born during the period May to August. Behavioural and perceptual immaturity necessitating a return to the starting point of learning basic skills were characteristic features of these children, almost all of whom were members of the lower achieving groups. Secondary psychological symptoms such as lack of confidence and emotional maladjustment were often displayed as well.

While the possibility may exist that children born during the warmer summer months obtain slightly higher scores on 'intelligence' tests, there is little doubt that the advantages gained by these children are small compared with the disad- vantages conferred on them by being born at th 'wrong' end of the school year. The evidence fro research demonstrates clearly that the younge children in any school year group are at a di advantage compared with the older childre (Pidgeon, 1965).

This study, undertaken in N. America, wa designed to examine the significance of month birth and specifically to test the hypothesis th the number of poor achieving children bo during the period May to August exceed th number of poor achieving children born duri the other months of the same year.

It is also suggested that since many scho districts in North America commence in Septe ber, but accept children who have birthdays u until December 31 as ready for that year, the will be a greater number of poor achievers fou in the birth period September to Decembe These children would also be the youngest i each grade.

Subjects

The sample consisted of 256 kindergarte grade one and grade two children. Sixty-fo kindergarten, 100 grade one and 92 grade tw children comprised the sample from 24 clas rooms and 11 schools. Their ages ranged fro

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five years five months to nine years four months. Each classroom teacher was asked to select from among her pupils all those who were 'poor achievers', those children who would not advance to the next level or grade in school at the end of next year. The teachers were asked to randomly select from the average and outstanding achievers an equal number of children. In the total sample there were 122 poor achievers and 134 average achievers. Twelve poor achievers were discarded due to ambiguous teacher reports.

Results

The data were analysed to determine the correlations of date of birth with achievement level. Chi squares corrected for continuity for all comparisons were computed and Phi coefficients were determined for each Chi square. F values were also calculated for these data. The hypothesis tested dealt with the months of birth (May to August and September to December) and their relationships to achievement level (poor or average).

The results indicate that there is not a significantly greater number of poor-achieving children born between the months of May and August (χ^1=3·01, RØ=·108, P>·10) (F1, 255)=1·07, P>·10). Examination of Table 1 reveals that there are, in fact, more average-achieving children born during the months May to August than poor-achieving children.

In contrast, those children born between September and January do comprise the largest proportion of the poor achieving group (χ^2=15·20, RØ=257, P<·01) (F1, 225)=4·05, P<·05). Table 2 illustrates that there are significantly more September to January children who are poor achievers than January to August children. There are also significantly more January to August children who are average achievers than September to January children.

Table 1: Frequency of poor- and average-achieving children born May to August and those born in the other months of the same year

	Poor	*Average*	*Total*
May–August	27	47	74
Others	95	87	182
Total	122	134	256

Table 2: Frequency of poor- and average-achieving children born September–January and January–August

	Poor	*Average*	*Total*
September–January	51	32	83
January–August	47	95	142
Total	98	127	225

Discussion

The hypothesis that a larger proportion of low-achieving children are born during the months May to August was not confirmed. The present study reveals that approximately 74 per cent of the children born during these months were average achievers. They only accounted for 22 per cent of the total number of poor achievers.

The relationship of birthdate to commencement of the school year was further examined. The achievement levels of children born after the commencement of the school year, but who were still eligible to begin their respective grade were compared with children born in the earlier months of the same year. The younger children in this portion of the study were those born between September and December. The results indicate that these children comprise 48 per cent of the poor-achieving group and only 25 per cent of the average-achieving group. Of the total population studied these children comprised 37 per cent.

The influence of the school system made it difficult to establish the actual importance of birthdate as affecting achievement. The study was carried out in an area where there was only one starting date for school entrance. Thus the effect of month of birth was always influenced by its nearness or distance from the month of entrance. A school system which provided several starting dates within one year would have been more desirable to study in this regard.

The present study leads to further considerations regarding the effect of month of birth or age on achievement. It would appear that birthdate is important only in relation to the school system's commencement date. Studies are required to determine if the month of birth affects achievement or whether achievement is solely related to age within a grade. School systems which have several commencement dates within one year

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(e.g. Britain) would yield important information to this discussion. Hopefully it could be determined whether birthdate in relation to school commencement and not any month or months as such, have a significant effect upon the academic achievement of children.

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STUDENTS' WORRIES: AN INTERNATIONAL COMPARISON

R. J. R. KING *University of Sydney*

ACADEMIC AND non-academic worries reported by British and New Zealand first-year university students are compared and the effect of variables such as sex and course is assessed. New Zealand students' worries are matched against performance in university examinations.

In 1969, Frank Musgrove reported on a study he had conducted of the worries experienced by first-year Science and Arts students enrolled at a British university (Musgrove, 1969). A sample of students were asked to indicate which items on an extensive list were most important in reference to their adjustment to university life. The resulting 21 'worries' were then submitted to a random 50 per cent sample of Bradford University Arts and Science students at the end of their first university term in 1966. Eighteen months later the same list was administered to as many of the first group as could be located.

There was no overall increase in the number of worries marked on the second occasion (i.e. 1968 compared with 1966). When the worries were ranked in terms of frequency of mention, however, some differences were noticeable, both between the 1966 and 1968 total samples and among sub-groups selected on the basis of academic course and sex. For example, the proportion of respondents who felt overwhelmed by academic work increased and those who felt unsure of their abilities decreased. Science (including technology) students reported more worries than Arts (including Social Science) students and more men than women were troubled about the thought of examinations.

The present report, however, is more concerned with making comparisons between the nature and range of worries recorded by students at a British university and those indicated by New Zealand students, as well as with identifying associated variables such as examination success.

The respondents

The total first-year admission in the faculties of Science and Arts at the University of Otago in 1970 numbered 911. With the exception of 10 withdrawals from the university, all were included in this study. The check list was the same as the one adopted by Musgrove. The distribution by course and sex of those who responded to the questionnaire is given in Table 1.

Although there were variations in the rates of responding between the two faculties and by sex (e.g. 76 per cent by male Arts students compared with 93 per cent by female Science students), the overall rate (81 per cent) was sufficiently high for statements from the data to be regarded as

Table 1: Male and female questionnaire return rates by faculty

		Total sample	*Non-respondents*	*Percentage Return rates**
Arts	Males	136	33	76
	Females	288	43	85
	Total	424	76	82
Science	Males	356	84	76
	Females	121	9	93
	Total	477	93	81
Combined (Arts and Science)	Males	492	117	76
	Females	409	52	87
	Total	901	169	81

*Respondents as a proportion of the total sample.

Table 2: Problems reported by British and New Zealand first-year students

	New Zealand Students								British Students	
	Arts		*Science*		*Total Students*					
	M%	F%	M%	F%	M%	F%	Rank	%	Rank	%
1. Feeling you're not working as hard as you should	74	72	70	78	71	77**	1	74	1	68·2
2. The thought of exams	32	43	35	51	33	46**	2½	40	2	52·1
3. Being unsure of your abilities	52	39	31	47	37	42	2½	40	3½	36·6
4. Being bored by some of your work	35	25	40	42	39	30**	4	35	5	30·1
5. Being depressed	24	32	15	29	17	33**	5	24	7	29·5
6. Worry over money	24	20	16	20	18	20	7	19	6	29·8
7. Worry about future career prospects	17	15	23	21	21	18	7	19	14	13·7
8. Problems with boy/girl friend	20	23	16	18	17	22	7	19	9	26·0
9. Feeling overwhelmed by academic work	8	25	12	18	11	23**	9½	17	8	29·1
10. Difficulty in doing written work or exercises	14	20	13	23	13	21	9½	17	12	16·8
11. Difficulty in understanding lectures	14	12	18	25	16	17	11	16	3½	36·6
12. Difficulty in doing practical work	6	6	18	31	15	13	12	14	16	9·9
13. Feeling shy or awkward	16	11	12	16	13	13	13	13	11	19·2
14. The manner or attitude of a lecturer	17	10	12	8	13	9	15	11	10	21·6
15. Worry about your family	8	12	9	14	11	13	15	11	18	7·5
16. Feeling lonely	10	10	11	15	11	11	15	11	17	7·9
17. Lack of guidance in your work by staff	6	8	10	9	8	9	17	9	13	15·1
18. Homesickness	3	5	5	22	5	10	18	7	20	4·1
19. Unsatisfactory accommodation*	2	5	7	5	5	5	19	5	15	12·7
20. Disagreement with university friends	2	3	4	0	4	3	20	3	19	5·5
21. University rules or restrictions	3	0	1	0	2	0	21	1	21	1·7

Note: Percentages in the New Zealand sample are rounded up. Comparisons between British student ranks and New Zealand student ranks yield a Spearman rank order correlation of 0·86.
*These students were housed in hostels (25), in flats (9), in lodgings (4), and at home (2).
**Comparisons between males and females were significant at the ·01 level.

representative of Otago first-year university students.[1]

Results

The worry most frequently indicated by New Zealand first-year students was 'Feeling you're not working as hard as you should'. This item was scored almost twice as often as any other, i.e. by nearly three-quarters of the respondents compared with the two next most frequently recorded worries, 'The thought of exams', and 'Being unsure of your abilities', each chosen by 40 per cent of the sample (Table 2). Least frequently mentioned were worries about unsatisfactory accommodation (five per cent), disagreement with university friends (three per cent) and worries about university rules or restrictions (one per cent). In general, academic worries (e.g. numbers 1, 2, 4) were reported more frequently than non-academic worries (e.g. numbers 6, 7 and 8). Any difference in the order of presentation of the list to New Zealand and British students is unlikely to have influenced the results to any degree.

There was little apparent disagreement overall between what worries were of least and of most concern to British and New Zealand first-year students respectively. But considerable variations appeared among those worries which were of middle range importance (i.e. among the middle 50 per cent), although this phenomenon is of course, a characteristic of ranked data. For example, the British students more often indicated worries about relationships with their university teachers than did their New Zealand counterparts (Table 2). British students' worries about the manner and attitude of a lecturer produced a rank tenth in importance (New Zealand rank 15th), and lack of guidance by staff, 13th compared with New Zealand 17th.

Academic worries were also assigned more or less equivalent ranks by both groups, but proportionately more British students complained they had difficulty in understanding lectures (ranked 3, fifth compared with New Zealand

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[1] Female rates exceeded males $(p < \cdot 001)$
Female Science rates exceeded:
female Arts $(p < \cdot 01)$
male Arts $(p < \cdot 05)$
male Science $(p < \cdot 05)$

11th), and New Zealand students indicated they had more worries about their future career prospects (New Zealand seventh, British 14th).

Differences According to Sex

Female students indicated more worries in total than males. Total worries reported numbered 3,159. These included additional worries gleaned from comments in the 'Other' section of the questionnaire: psychological problems—24; academic work—19; other accommodation problems—14; health—10; course content—10; and miscellaneous—29. Males contributed 1,437 and females 1,722. Significantly more females contributed seven or more worries than males ($p > \cdot 02$). Mean worries for New Zealanders (4·3) corresponded with British mean worries (4·7). Proportionately more females reported having academic worries, for example, about not working hard enough (females 77 per cent: males 71 per cent), the thought of exams (46 per cent: 33 per cent), and feeling overwhelmed by academic work (23 per cent: 11 per cent). Differences between percentages in the three female: male comparisons were significant at the ·01 level. On the other hand, male students more often complained about being bored by some of their work (males 39 per cent: females 30 per cent), although this difference was not statistically significant. There was a high correlation between the rank order of worries reported by males and females ($r = \cdot 87$) but worry about 'feeling overwhelmed by academic work', was much more highly ranked by females (sixth rank) than by males (15th).

The type of worries reported by Science females compared with Science males probably represents the influence of traditional expectations relating to the discipline of Science as a male preserve. (Indeed over twice as many males as females were enrolled in Science courses—71 per cent compared with 29 per cent of total male and female first-year enrolments.) Female Science students were more concerned than males about their written work (23 per cent: 13 percent), their practical work (31 per cent: 18 per cent), the thought of exams (51 per cent: 31 per cent) and about their own academic ability (47 per cent: 37 per cent).

Conditions of admission to university are much more liberal in New Zealand than in Britain. With easier access, one would expect that the range of ability among New Zealand students would be considerably wider than in Britain. This difference in range of ability could explain the higher proportion of New Zealand students compared with British students who were bored by their work and the lower proportion who felt overwhelmed by academic demands (Table 2). The total figures, however, obscure interesting differences between males and females in the two samples (Table 3). For example, 30 per cent of New Zealand female respondents indicated boredom (British 11·3 per cent), and 23 per cent indicated feelings of being overwhelmed by academic work (British seven per cent). These results could also be interpreted in support of the proposition that New Zealand lecturers accommodate their teaching to the wider demands represented by the greater variety of abilities in their students in such a way that more of the less able students are satisfied but the brighter students are bored rather than over-extended. On the other hand, although the range of abilities is narrower, British lecturers cater adequately for only a third of their students. It is interesting, for example, that only 16 per cent of the New Zealand students' worries were about experiencing difficulty in understanding lectures while this was so for 37 per cent of the British students (Table 2).

This latter explanation, however, does not take us very far when we seek to account for the fact that while more New Zealand female students than males reported worries about examinations (46·0 per cent compared with males 33 per cent), the reverse tended to be true of British students (males 9·5 per cent and females 7·0 per cent). Although explanations can only be tentative, if we accept that traditional attitudes towards the place of women in higher education are not very different between the two countries, an examination of the consequences of the very different entry practices might suggest some answers.

While female students compete with males for the limited places in British universities, New Zealand females holding appropriate qualifications have open right of entry. The former, on admission, have in a sense justified their right to a university place while the latter may feel they have not. It could be that British female students are consequently less likely to feel threatened by the pressure of examinations and the demands of academic work than either British males or New Zealand females. On the other hand, the latter feel more challenged to compete with males and so more often report concern about being overwhelmed by academic work and worry about examinations. A quarter of the New Zealand female students enrolled in Science reported difficulties in understanding lectures while this was so for only 18 per cent of the male Science students. The greater number of reports of examination worries from British males and New Zealand females therefore may be more a reflection of differences between the situations of female students in both countries than differences between males.

Finally, although proportionately more British students complained about the 'manner and attitude for a lecturer', insufficient data were available from the British sample to ascertain the significance of these comparisons. The more universal day-to-day problems with girl and boy friends, with shyness and about disagreements with university friends, seem equally important to students of both nationalities.

Difference according to course

When the influence of university course is measured, on average, more worries are produced by female Science students than by female Arts students (4·94: 4·04). Moreover, female Science students significantly more often report problems with practical work, more difficulties in understanding lectures and more complaints about being bored by their work (0·1 levels).

Two non-academic (or personal) worries, homesickness (22 per cent: 5 per cent) and uncertainty about ability (47 per cent: 39 per cent), are also reported proportionately more often by female Science than Arts students. However, proportionately more female Science students live away from home (mostly in hostels) than Science males (84 per cent: 76 per cent), or Arts males (62 per cent), or Arts females (60 per cent). Female Science students exhibit similar worries to female students in general, but frequencies are proportionately greater.

When comparisons are made between males enrolled in Science and Arts courses, proportionately fewer of the former admit to being unsure of their abilities (31 per cent: 52 per cent) and depressed (15 per cent: 24 per cent), but significantly more are worried about practical work (18 per cent: 6 per cent). On the whole, Science

Table 3: Academic and non-academic worries indicated by male and female British and New Zealand first-year students

	Worries Indicated (%)			
	Males		*Females*	
	*Br.** (211)	*N.Z.* (375)	*Br.** (71)	*N.Z.* (357)
Academic worries				
The thought of exams	9·5	33·0	7·0	46·0
Feeling overwhelmed by academic work	12·2	11·0	7·0	23·0
Being bored by some of your work	14·9	39·0	11·3	30·0
Difficulty in understanding lectures	—	16·0	32·4	17·0
Difficulty in doing written work or exercises	—	13·0	21·0	21·0
Difficulty in doing practical work	8·6	15·0	—	13·0
Non-academic worries				
Being unsure of your abilities	19·9	37·0	—	42·0
Worry about future career prospects	7·2	21·0	—	18·0
Problems with girl/boy friend	—	17·0	23·9	22·0
Feeling shy or awkward	—	13·0	15·5	13·0
Manner or attitude of a lecturer	14·9	13·0	21·1	9·0
Disagreement with university friends	3·2	4·0	—	3·0
Unsatisfactory accommodation	11·3	5·0	—	5·0

*Some information about responses of male and female British students was not available.

males seem more sure of their academic abilities than Arts males and on average report fewer worries overall (3·79: 3·96).

Selected worries and examination success

Proportionately more of those students who were highly successful in their final examinations were classified as reporting few worries (0–3; see Table 4). The converse was also more or less true: more of the students in category 3 (failed all subjects) reported seven or more worries. It is interesting that the percentage of high worriers among those students in category 2 was greater than among the category 3 students (26 per cent compared with 17 per cent) and not much different from the most successful (category 1) students. These results suggest that low anxiety may be almost equally reported among low as among high achievers. One could argue on the one hand that those who reported academic worries were more likely to make efforts to succeed and that this effort resulted in a good pass performance. Or, on the other hand, it could be that worries were so overwhelming that effort and performance were impaired. It does seem that those who report many worries are more likely to be borderline students than better or poorer students but clearly the effects of ability should be taken into account. Explanations at this stage can only be tentative.

Proportionately fewer of the students who succeeded in passing all their examinations recorded difficulties in understanding lectures and in doing written or practical work compared with those who failed or had partial success. On the other hand, the students in category 2 (partial examination success) recorded the highest proportional incidence of mentions of each of the three academic worries. Difficulty in doing practical work seemed equally worrisome for those who succeeded as for those who failed their final examinations. Science students, however, are more involved with practical work than are Arts students, and examination success was found in this study, proportionately greater among Science than among Arts students ($p < \cdot 06$). This may explain the similar proportions; i.e. the fact that more students in category 1 reported difficulty with practical work (or rather worry about this difficulty) than those in category 3.

Worry over money presumably included concern about the receipt of bursary and fees

Table 4: Degree of examination success by type and number of worries

	CATEGORIES OF DEGREES OF EXAMINATION SUCCESS		
	(1) *High Success* (474)	(2) *Partial Success* (136)	(3) *Failed all Subjects‡* (113)
Academic Worries			
Difficulty in understanding lectures	71 (14%)	65 (47%)	21 (18%)*
Difficulty in doing written work or exercises	75 (15%)	30 (22%)	21 (18%)*
Difficulty in doing practical work	56 (11%)	33 (24%)	12 (10%)**
Non-Academic Worry			
Worry over money	74 (15%)	32 (23%)	33 (29%)*
Total Worries Reported			
High (7†)	74 (16%)	35 (26%)	19 (17%)
Medium (4–6)	159 (34%)	43 (32%)	44 (39%)
Low (0–3)	241 (51%)	58 (43%)	50 (44%)
Totals	474 (101%)	136 (101%)	113 (100%)

*·05 level   **·01 level

†High success included those who failed no more than 25% of the subjects they offered; partial success includes all others who had some success.

‡Percentages were computed using these totals. For example, 71 of category 1 students (474) said they had difficulty in understanding lectures.

allowances, payment of which are contingent upon satisfactory performance in examinations. If this assumption is true, then it would be understandable that the incidence of concern about money might increase as exam success diminishes.

Conclusion

Taken overall, the proportions of worries nominated by students seem to indicate more academic insecurity among New Zealand than British students. It seems that more stringent selection procedures limiting British student entry to university have consequences for the ease with which they manage academic work, their anticipation of doing well at examinations as well as their assuredness of future career opportunities. On the other hand, the relatively easy access of New Zealand students to higher education is associated with widespread concern about academic performance and uncertain future career prospects. Slowly expanding markets in New Zealand seemingly do not regard graduates as a scarce resource.

Sex differences and course choices seem related both to the type and number of worries reported and also to academic success. Females report more worries than males and seem to be challenged by academic demands which males take in their stride. The thought of impending examinations and the pressure of work demands aggravated by feelings of inadequacy are frequently linked with reports of depression. Female Science students, compared with female Arts students, show more concern about lectures and practical work and seem more often bored by their work. Male Science students are least uncertain of all subgroups about their ability to succeed. Compared with male Arts students they are more concerned about practical work demands and about future career prospects but are less prone to depression.

Finally, those who were successful in all their examinations reported fewer worries than those who were unsuccessful; the greatest incidence of worries was reported by those whose examination success was partial.

Many of the hypotheses advanced by way of explanation are tentative. Verification will require the collection of additional data about ability levels, aspiration and achievement motivation, to name a few important additional variables.

Reference

Musgrove, F. (1969). 'What worries students', *Educ. Res.*, **12**, 1, 56–69.

(*Manuscript received April 1971*)

APPOINTMENTS

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BOOK REVIEWS

Educational Judgements: Papers in the philosophy of education

edited by James F. Doyle

Routledge & Kegan Paul (International Library of the Philosophy of Education), 265 pp., £3.50

The first volume published in this Library (*Education and the Development of Reason*) came in for a certain amount of harsh criticism in some quarters. It was not always clear precisely what was meant by claims such as that it lacked 'imagination', but certainly many felt that the continued emphasis on the analysis of concepts such as 'mental health' and 'education' itself had reached a saturation point that hovered uneasily between sterility and covert prescription, while the stress on reason was giving education a grey lop-sided appearance. However that may be, this new volume, *Educational Judgements*, is welcome: the papers collected in it have a new toughness and show signs that the authors are concerned to try to make more positive noises about what should be going on in education, hazardous though this approach may be.

The book is divided into six sections. Each section involves at least one article that is designed as a direct comment on another in the section. An index completes the volume.

In the final section, Scheffler, Price and Edel consider the question of the relevance of philosophy to student teachers. Scheffler argues that philosophy must rediscover its links with educational practice, while Price approaches the matter in a different way by examining the notion of 'relevance'. But it is Edel's paper that is most interesting. Via a brief consideration of Peters' early and more recent analyses of the uses of 'education' he argues that the normative issues in education should be brought to the fore rather than allowed to lie hidden behind a screen of supposed detachment. His paper takes us full circle back to the beginning of the volume where Professor Frankena considers the concept of 'education' with the air of a man who does not intend to do so again. He argues, surely correctly, that there is a sociological use of the term which is purely descriptive of the way in which a given society does bring up its children, and there is a normative use. He suggests that any normative concept of education must contain, amongst other things, a reference to those dispositions that the speaker regards as desirable for the educated person to have, and it is in relation to these dispositions that the crucial questions arise. What are they to be? Part of his own answer to that question is that autonomy is desirable. But even this old favourite receives a more careful scrutiny here than in some previous volumes; Gewirth and Kaufman between them touch upon the crucial problems relating to this concept, with Gewirth arguing that if autonomy is to be accepted as an ideal it must include the notion of rationality (and not simply reasoning without reference to standards), and Kaufman offering the most radical note to be found in the volume, when he argues that, if autonomy is really to be our aim, then our very idea of what count as good reasons in various areas must be up for questioning. Quite what happens to the notion of good reasons under these conditions I am not sure.

Pincoffs tries to get round the problem of how we are to both avoid indoctrination and yet achieve some degree of commitment to a moral code amongst children by claiming that there are certain moral excellences of character that are not debatable. The paper is perhaps fairly criticized by Baier, but one feels nonetheless that Pincoffs' is the more interesting thesis and one that might well profit from further elaboration. In the third section Broudy considers the idea of aesthetic education and attempts to link it with the ideal of autonomy. He places the emphasis on the cultivation of imaginative perception—an emphasis that Price feels is misplaced. Rather, he argues, the ability to create and perform should be regarded as equally important. In the fourth section Peters turns his attention to the general question of whether the conditions that are necessary for an individual to be able to display some characteristic are necessarily necessary for the development of that characteristic. His method involves concentrating on the concept of freedom and the notion of the development of the free man. His paper is supplemented (rather than commented on) by a wide-ranging paper on 'The idea of a free man' by Feinberg. Section five offers papers by Olafson and Melden, neither of which are particularly persuasive, on the question of how one might establish a universal right to education.

Though there are weak and dull moments in this volume and though the whole could not be described as supremely important or scintillating, nonetheless in general the papers indicate an awareness of some of the real problems in the philosophy of education and an imaginative (if I may use the word) attempt to get to grips with them.

ROBIN BARROW

The Future of the Sixth Form
by A. D. C. Peterson
Students' Library of Education
Routledge & Kegan Paul, 1973, 88 pp., £1.50

This is a useful and provocative little book. It begins by exploring the present muddled arrangements for educating the 15–18 age group in Britain. Ever since the Crowther report appeared in 1959, great dissatisfaction has been expressed with these arrangements, particularly the GCE A-level examination, but various proposals for reform have all been rejected.

The author describes 'the myths of the curriculum' (a folklore of sixth-form life) which have been nurtured by 'committees of eminent men', but which are not supported by the evidence of surveys. Sixth-form students are far more narrowly confined in a three A-level subject curriculum than had been supposed. Teachers are more dominated by the A-level examinations themselves. Pupils are often prevented from choosing a broader range of subjects which would come closer to their own pattern of interest.

These deficiencies in the content of sixth-form studies are paralleled by shortcomings in the organizational structure. The traditional grammar school sixth-form was developed to cope with an academic élite (perhaps only five per cent or six per cent of the age group) which was mostly destined for the universities, but this is no longer the situation with which they are faced. Several alternatives are presently being tried by LEAs in various parts of the country. Peterson considers these briefly and concludes that the sixth form, as we know it, has no future at all. Sixth forms in Grammar and Comprehensive schools are dismissed for statistical and economic reasons. He argues in favour of a break at 16 and compares the experimental sixth-form college with the more broadly based, non-selective, junior college. Both these are new institutions to which the student would transfer at the end of the period of compulsory education.

On the curriculum side, he also offers a solution. Here, in place of highly specialized sixth-form study such as we have at present, he suggests a more diversified syllabus based on the design of the International Baccalaureate—an enterprize with which he is of course closely connected.

When, in the early part of the book, the author criticizes the Head Masters' Association, the Secondary Schools Examinations Council and the Central Advisory Council for Education, among others, for promoting their own subjective views without supporting them with research evidence, he sets himself a high standard. Although there are certain attractive features both in the junior college and the curriculum of the International Baccalaureate, it is safe to assume that each also has disadvantages. Research into these matters has not been completed, and it is perhaps to be regretted that the book lacks the supporting evidence that this could provide. There is also a danger that the author, while exposing certain unsubstantiated beliefs, may help to perpetuate others. Two that caught this reviewer's eye were: (a) the thesis that *all* sixth-form students would benefit from a continuing study of Mathematics, English and a foreign language (page 42); and (b) the implication that sixth-form teachers need to be 'good honours graduates' (page 66). Again, research evidence on these points would be welcome.

As in every other developed country, we are moving towards something like universal higher education. Existing patterns of sixth-form study can no longer cope with the demands made on them. Although this book is by no means the final word on sixth-form structure or content, it will provoke thought and discussion on an issue of growing importance.

BRUCE CHOPPIN

The Administration of Education in Britain

by B. Lawrence

B. T. Batsford, 1972, 213 pp., £2

To be Chief Education Officer for the large county of Essex for nearly 30 years, the first six of them in the War when Essex was in the front line, then in the reconstruction period of the '50s when the great Butler Act of 1944 was implemented and, finally, when the metropolitan parts of the county were taken away in the reorganization of local government in Greater London is an almost unparalleled record for an administrator. Lawrence fitted his role. He was one of those tough-minded, decisive and influential county education officers who were characteristic of those years and who have now almost disappeared. His book reflects his qualities—solid, accurate, humourless, thorough. Its views are those which have been canvassed ceaselessly by his colleagues and which have, to a large extent, been victorious in shaping the coming local government re-shuffle.

Unfortunately, the inevitable delay between the writing and the publication of this book renders it almost entirely of historical value. It was published about the time that the Local Government Act of 1972 was passed. It was written just before the introduction of new administrative practices arising from the first Maud Report could be assessed, before the impact of management techniques had had effect, particularly in urban authorities, before the argument about a statutory education committee was decided and before the issue of the Bains Report on management and structure in the new local authorities had signposted the considerable changes in the way local authorities will work in the future. One example of the way in which events have overtaken the material in the book will be seen on pages 191–194, which deal with an alternative control of local education to that of local education authorities.

The effect of reading a detailed argument for the creation of regional *ad hoc* boards for education as if legislation had not been started, let alone completed, is, to one who was sympathetic to this solution, depressing. All that can be done now about it is to watch whether the post-'74 pattern is so inadequate that putting forward the claims of an alternative system is seen to be reasonable.

But it would be futile to approach 1974 in that mood. The reader finds it difficult to accept a final couple of pages, quite clearly added as a postscript, on the 1971 White Paper. It is true that five principles are laid down by which we can judge our new system and I look forward to reading later contributions by Lawrence on his assessment of what happens in and after 1974.

Thanks to Bains, we are launched into a full managerial age in local government. Most of the new authorities will be controlled by a Policy and Resources Committee which will be served by a Chief Executive assisted by a Management Team of selected chief officers, amongst whom might or might not be the Director of Education. How different from the Lawrence epoch, but how inevitable, that a service which absorbs some 60 per cent of an authority's resources and which is growing fast should become an integral part of that authority instead of a quasi-independent service. At least there is a statutory education committee—against the wish of the Bains Committee—but it will have to fight for its share of the local government cake.

Lawrence's chapter on 'Resources and how we use them' is crammed with essential facts and shows clearly the growth problems which beset local authorities. Not only must we pay for the basic services such as schools and further education, but new arrivals keep intruding and this before the recent White Paper which proposes significant increases, including widespread nursery education. Although recent analyses like Ollerenshaw's 1969 paper which indicated a growth rate of at least seven per cent and Stuart Maclure's 'Learning beyond our means' (1968) are quoted, planned programmed budgeting, a technique on which the DES based the White

Paper and which is already widely used by local authorities, is not mentioned. It is no fault of the author's but simply an indication of rapid assimilation of management techniques.

The book, then, remains an authoritative account of how the state system of education was run in the halcyon post-War years. Lawrence omits little of importance and his book is a valuable record which perhaps could only have been attempted by someone who had played a leading part. If it is more of a reference book than one which can be read through, it is a valuable reminder of how complicated our system is and how much we owe to great administrators like its author who worked so selflessly and with great expertise to enable that system to grow to maturity in the two post-War decades.

C. S. SMYTH

A Practical Handbook of Careers Education and Guidance

edited by R. Heppell

Careers Consultants Ltd, 1972, 230 pp., £1.50

This is quite a small book, but one which adequately lives up to its title.

The first four chapters give a thorough account of various roles and functions of persons chiefly involved in careers education and guidance, viz., 'The careers and guidance department'—with the careers teacher at the centre of operations; 'The careers officer in the school situation'; 'The school counsellor'; 'The house head or year tutor'.

Chapter five, 'The techniques of the careers team', is a series of sub-chapters which cover in a competent and down-to-earth fashion the important areas of careers guidance work within, or directly related to, the school. The range of chapter headings speaks for itself: 'Occupational visits', 'Work experience', 'Radio and TV programmes', 'Other audio-visual aids', 'The careers library', 'Interest inventories and other personality assessments', 'The guidance interview', 'Sixth-form guidance procedures', 'The careers convention', 'Future developments in classroom techniques'.

The final chapter presents in somewhat ideal terms a plan and a timetable of events to be covered within the school year in a medium-sized comprehensive school.

Practitioners may quibble over details in this book but the essentials of good practice, and much more besides, are there. It should prove not only a very useful guide to teachers and others new to careers education and guidance work, or in the early days of setting up a department or service within their schools, but also a handy reference for those more familiar with the field.

The uninitiated, at least, may feel that distinctions between counselling, guidance, pastoral care and learning functions are not drawn sufficiently clearly, nor between the various key roles but this shortcoming is perhaps inevitable where a number of authors are contributing and writing from their own particular standpoint.

Notably good features in the book that keep recurring are: (1) the recognition that in careers education and guidance the needs of the individual pupil are of central importance; (2) an emphasis on the team approach; and (3) that objectives should be clearly thought through and expressed in operational terms.

It would have been helpful to have more on group situations and techniques of working with groups: they can play a significant part in the learning function. However, careers teachers, and even teams, will no doubt feel there is already too much expected of them, even if they provide no more than half of the procedures the authors regard as necessary for an adequate guidance service.

This handbook seems very good value for money. Content apart, it is not very often these days that one comes across a handbook of 230 pages priced at £1.50.

B. MOORE

Diversity and Choice in Higher Education

by A. G. Watts

Routledge & Kegan Paul, 1972, viii + 268 pp., £4

To write a lucid book on a confused subject is a difficult task, but this is a good attempt. The author analyses an uneven patchwork of variegated evidence, takes one brief, final look at the assemblage, and then makes a tentative declaration of faith. In the circumstances one could hardly hope for more.

The book's main theme is the difficulty of knowing exactly what choice means in this area, and whether it is possible to reconstruct our present system so that meaningful choices by students can indeed be made. For research evidence the author has to go chiefly to the USA, but the main focus is on England and Wales, and comparative data from other parts of the world are brought into the discussion.

A number of aspects of higher education in England and Wales are first investigated, and it is shown that, compared with most other developed countries, our students do appear to have more options open to them in a more diversified and geographically and financially available range of institutions. Having said this, the author then makes apparent the uncertain nature of this ostensible choice, and sets up a tentative sociological hypothesis concerning the critical variables involved, which are seen to be mostly matters of social class and alienation or acceptance feelings. This hypothesis he tested on 322 sixth-formers in Leeds schools in 1968, but the results were unenlightening. It did not appear that the proposed hypothesis was at all adequate to account for the observed facts, and the questions which he posed remained unanswered.

His next step was to collate the few British and many American studies of interactionist ideas as to the content of higher education. Most time is spent on consideration of the possibility of matching students and institutions, and the snags in this process are adumbrated—both the methodological snags of research studies in the area, and the ideological snags of attempting to apply it or even of basing research upon it. The conclusion is reached that to talk simply of matching students and institutions implies too static a concept of education; that further studies should investigate the concept of 'optimum-stretch' for the student; and that choice should lie in finding which institutions produce this effect for which students.

Finally, the author, after a short discussion of various possible models of the choice process, states his own belief in some sort of regionalization:

'It may be possible to synthesize some of the main elements of each of the models by federating all the institutions of higher education in each area and establishing a credit system which would make it easy to transfer from institution to institution.

'Whatever the implications for the institutional structure of higher education, it would seem that the justification for the vast expenditure required by the system of choice as it operates at present is at least open to question. The system has already been under attack from politicians and educationalists who are primarily attracted by the economic advantages of localized recruitment. If these arguments are to be effectively countered, more attention must be paid to making the choice process meaningful.'

Colin Flood Page

Effective Reading Instruction for Slow Learners

by D. C. Cushenbury and K. J. Gilreath

Charles C. Thomas, 1972, 167 pp., $6.75

The purpose of this book, written by the Foundation Professor and Assistant Professor of the Faculty of Education at the University of Nebraska, is to provide a 'practical, easy-to-read source' for both 'pre-service and in-service teachers at all elementary and secondary levels'. As a source book its value is limited, due to the fact that it was designed for an American target population and consequently the majority of reading schemes and materials quoted are unobtainable in the British Isles. However, as an introduction and guide to the basic principles of reading instruction for slow learners it is far more useful, providing many practical ideas to help the teacher individualize the reading programme and record the progress of pupils.

The basic characteristics of the slow learner and some of his educational and psychological needs are described in Chapter I, and in the next chapter, reading goals applicable to these children are discussed before proposing principles on which a broadly-based effective reading programme may be built. Reading readiness, its physical and mental aspects, is dealt with next, and this chapter provides some useful practical suggestions for the assessment, promotion and development of reading readiness. The fourth chapter contains a discussion of reading evaluation and, although many of the commercial tests described are American, there are descriptions of assessment techniques not involving standardized tests which are equally valid and useful for the British teacher.

Word analysis, phonic skills and structural analysis are rather sketchily covered in Chapter V, but again some useful classroom techniques are proposed. Reading comprehension, an essential part of true reading, is dealt with in a brief manner, but Chapter VII gives some practical advice in the training of perceptual motor skills. An often omitted topic, motivation, is discussed in Chapter VIII. However, cultural differences may well nullify the effectiveness of the proposed behaviour modification techniques. Chapter IX, 'Materials for teaching reading to slow learners', and the appendices of books and materials are of little use in this country.

Essentially this is a practical book written with the purpose of providing assistance to the student or young teacher experiencing the problem of teaching reading to the slow learner. The suggestions made in the first eight chapters for evaluation, programme structuring, materials to be used and techniques employed have all been classroom tested both in normal and special schools, and would provide a useful basis for those teaching slow learners for the first time. Colleges of education would also find much of the content useful, especially considering the lack of importance placed on preparing the student of education for the inevitable confrontation with the slow learner. Perhaps the main failing of the book is the constant reference to American materials and books which the majority of British teachers would find impossible to obtain.

D. R. K. Quayle

Knowledge, Education and Cultural Change

edited by R. Brown

Tavistock Publications, 1973, 410 pp., £4.80

A set of 13 papers, which were presented at the 1970 annual conference of the British Sociological Association, has been brought together by Richard Brown to provide an important contribution to the Sociology of Education. The selection is not intended as a coverage of what has been accomplished but, more importantly, it provides a number of directions for the development of sociological studies in education.

For the student of Sociology interested in Education, the readings supply a set of rich theoretical frameworks from which many exciting hypotheses can be generated. In three articles related to the sociology of curriculum, for example, Ioan Davies, Young and Bernstein present arguments which begin to open up a relatively unexplored but highly fertile area for research. Similarly, the typology relating educational systems and social mobility, which Hopper develops, evokes many questions in need of empirical investigation.

The student who is interested in the theory of organizations will find that the readings by Brian Davies and Lambert *et al.* pose important problems while at the same time suggesting theoretical underpinnings for organizational analyses of educational institutions. Unfortunately, as Brown indicates in his introduction, the readings do not provide an extended discussion of some of the more recent action frame of reference approaches to the study of organizations.

The readings are not confined to an examination of the English educational system. For example, the distribution of cultural capital in France is discussed by Bourdieu and the structural problems of educational systems in Latin American countries are investigated by Pearse. In addition, certain Latin American countries are selected by Roberts for his analysis of the influence of social and economic factors on educational development, while McPherson looks at the social-selective function of the ancient Scottish universities. All of these studies provide valuable insights into the educational systems of the countries examined, while providing guidelines for the analysis of the English educational system.

Thus, the text provides a series of thought-provoking theoretical positions and suggests a number of challenging areas for future research. However, little attempt is made to stress the need for increased sophistication in the research designs of studies in the sociology of education. Perhaps the text would have been strengthened with one or two readings related to the development of instrumentation and to the latest developments in multivariate statistical analyses. It will be unfortunate if in future research the elegance of some of the theoretical positions is not matched by equally elegant methods of research design and analysis.

In the introduction to the text there is a discussion of the lack of a relation between many research findings in the sociology of education and the everyday running of a school or the teaching of children. Although the teacher undoubtedly will find that the offerings in this book are of great interest, he will also find that they are of little help in planning his everyday activities. But the importance of the readings is their potential to provide the means of obtaining answers to some of the most disturbing questions confronting educators, especially in the areas of curriculum planning and implementation, and of school organization. It is because of this potential that the text is valuable, both for students of sociology and for teachers in the classroom.

KEVIN MARJORIBANKS

Into the Life of Things: An exploration of language through verbal dynamics

by Christabel Burniston and Jocelyn Bell

English Speaking Board, 1973, 147 pp., £1.85

'Verbal dynamics' is an active approach to language through simultaneous exploration of the sounds of words and the physical movements they evoke. The core technique is the utterance of words while performing the physical movements associated with them. The rhythm and tone of the movement is naturally made to reflect the rhythm and tone of the words as they are spoken.

The book describes how teachers can apply this highly onomatopoetic approach to language in a wide range of active group or individual work. Wisely, the authors do not spend time discussing how or why it is that, when skilfully used, words can convey their meaning by their sound patterns. The main thing is that by experiencing words as muscular actions the learner makes the words his own—he 'sees into the life' of the words.

No strict aims for verbal dynamics are given. It is a flexible and versatile approach to a number of situations. For example, vocabulary can be enriched by exploring in sound and movement the subtle differences between members of a particular word family: a class can examine the different ways of 'walking' in terms of the differences in rhythm in such words as *trip*, *saunter*, *meander*, *wander*, *totter*, *shuffle*, *teeter*, *stroll*, *trudge*, *plod*, *scurry*, *shamble*, *stump*, *stamp*, and so on.

Verbal dynamics also supplies a coherent approach to basic exercises in drama ('exploring the senses'), thematic and project work in English, and language therapy for retarded children. However, one of its greatest virtues would appear to be its potential for a lively and meaningful basis for literary appreciation. The authors show how prose and poetry passages can be studied by exploring in action the sense of motion which writers sometimes seek to convey.

The first part of the book contains many examples of passages which lend themselves to being introduced to children through movement lessons, while the second part is a straightforward anthology of over forty prose and poetry extracts. These are by both established adult authors and children's authors. All are suitable for interpretation by verbal dynamics because of the effectiveness with which they convey exciting movement—usually in a narrative context.

The authors stress that verbal dynamics is not necessarily intended as a literary end in its own right. The intention is to bring young readers to make a genuine personal response to literature through reading 'not just with the eye, but with imaginative muscular power.'

Teachers who face the problem of making language come alive for their classes will find the book extremely useful. It is sufficiently informative to form the basis for a language and movement course in its own right if required. Drama teachers looking for ways of building up concentration, absorption and confidence will also find the book useful.

The approach has been used successfully with Junior, Secondary and College of Education groups, as the plates of illustrations and examples of students' and children's writing show.

In all, the book is an excellent drawing-together of both new and existing ideas and practices. It is obviously written from the point of view of experienced teaching and succeeds in showing how a lively and delightful approach to language can be put into practice.

DENIS R. VINCENT

Contemporary Problems in Higher Education

edited by H. J. Butcher and Ernest Rudd

McGraw-Hill, 1972, 401 pp., £7.20

A major event in the study of higher education in the '60s was the publication of *The American College*. Its 30 distinguished contributors apply the thought and research of the social sciences to examine empirically the processes of higher education. It is no exaggeration to say that it established higher education as a field of intellectual inquiry, and took the first steps towards providing a theoretical basis for evaluating educational practice.

Contemporary Problems in Higher Education, as the editors indicate in their opening remarks, is an attempt to do something similar for British higher education. After an introductory section, there are chapters on the selection and performance of students, on experiment and innovation in teaching, and on development and change among students. There is a section on student unrest, and this is followed by some chapters on the institutions themselves, particularly their staffing and government. A final section examines aspects of the economics of education. Does it meet the very high standard which it sets itself? Well, only in parts.

There is, for example, a brilliant chapter by Malcolm Parlett in which he takes to pieces the 'agricultural botany paradigm' and makes a plea for research strategies which are attuned to people, not plants. There is an extremely interesting comparative account of the various ways of financing higher education by Maureen Woodhall, and useful studies of the effects on student life of residence, by Joan Brothers, and social class, by Joan Abbott. There are also Graeme Moodie on university government, Halsey and Trow on university teachers and Tessa Blackstone and Gareth Williams on structural aspects of the academic profession, Noel Entwistle on the Rowntree research project, J. A. Wankowski and Nicolas Malleson on student wastage, Ruth Beard and Jane Abercrombie on teaching methods, and George Psacharopoulos on the returns of higher education.

But this is an uneven book both in its scope and in the nature and quality of the contributions. Thus, while there are three chapters on student unrest—including a self-indulgent swipe at The Press by one of the editors—other aspects of students' reactions to their experiences are largely ignored. Among the 28 chapters, there is just one specifically on the colleges of education—a fascinating account by M. D. Shipman of the development of Worcester College of Education. Too many of the chapters are pale shadows of detailed reports which appear elsewhere.

Although the book takes as its starting point an inputs–processes–outputs model, this is not followed through. There is little on the factors affecting entry and even less on occupational outcomes. Change in attitudes and values is examined from only one point of view, and the persistence of change is not explored. There is no systematic consideration of either environmenta effects on student development or the influence of external forces on institutional change. It could be argued that the research simply has not been done, but, while it is true that some areas, for example environmental press, have been sadly neglected, a glance at the educational journals shows that much more has been achieved than one would guess from this volume. What the book really cries out for is some statement of the progress made so far and where the future migh lie.

Contemporary Problems in Higher Education is worth reading for some of the individual contributions. But the whole is unsatisfying because it does not knit together. It aims to be both detailed and comprehensive, but falls somewhere between the two. Perhaps a more specific focus should have been adopted—for example, the nature and determinants of change among university students. There is still room for a British successor to *The American College*.

Alan Smithers

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